OsmoSGSN VTY Reference

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Chapter 1

VTY reference

The Virtual Tele Type (VTY) has the concept of nodes and commands. This chapter lists all nodes and the commands that are available within the node. Each command can consist out of several words followed by a variable number of parameters. There are common patterns for the parameters, these include IPv4 addresses, number ranges, a word, a line of text and choice. The following will explain the commonly used patterns.

Pattern	Example	Explanation
A.B.C.D	127.0.0.1	A IPv4 address
TEXT	example01	A single string without any spaces, tabs
.TEXT	Some information	A line of text
(OptionA|OptionB|OptionC)	OptionA	A choice between a list of available options
<0-10>	5	A number from a range

Table 1.1: VTY Parameter Patterns

The application is configured through the VTY. For configuring a system one needs to enter the **enable** node and then enter the **configure terminal** command. Then the configuration can be made according to the available commands. After the system has been configured one can use the **write** command to write the new configuration to the configuration file. The new file will be used after the application has been restarted.

The following table lists the TCP port numbers of the VTY for the various Osmocom GSM related programs as used on sysmocom products:

Port Number	Software
4240	osmo-pcu
4241	osmo-bts
4242	osmo-nitb, osmo-bsc
4243	osmo-bsc_mgcp
4244	osmo-bsc_nat
4245	osmo-sgsn
4246	osmo-gbproxy

Table 1.2: VTY port numbers

1.1 Common Commands

These commands are available on all VTY nodes. They are listed here only once, to unclutter the VTY reference.

1.1.1 end

Command

```
end
```

Parameters

end
: End current mode and change to enable mode.

1.1.2 exit

Command

```
exit
```

Parameters

exit
: Exit current mode and down to previous mode

1.1.3 help

Command

```
help
```

Parameters

help
: Description of the interactive help system

1.1.4 list [with-flags]

Command

```
list [with-flags]
```

Parameters

list
: Print command list

[with-flags]
: Also print the VTY attribute flags

1.1.5 show running-config

Command

```
show running-config
```

Parameters

show
: Show running system information

running-config
: running configuration

1.1.6 show vty-attributes

Command

```
show vty-attributes
```

Parameters

show
: Show running system information

vty-attributes
: List of VTY attributes

1.1.7 show vty-attributes (application|library|global)

Command

```
show vty-attributes (application|library|global)
```

Parameters

show
: Show running system information

vty-attributes
: List of VTY attributes

application
: Application specific attributes only

library
: Library specific attributes only

global
: Global attributes only

1.1.8 write

Command

```
write
```

Parameters

write
: Write running configuration to memory, network, or terminal

1.1.9 write file [PATH]

Command

```
write file [PATH]
```

Parameters

write
: Write running configuration to memory, network, or terminal

file
: Write to configuration file

[PATH]
: Set file path to store the config, or replace if already exists

1.1.10 write memory

Command

```
write memory
```

Parameters

write
: Write running configuration to memory, network, or terminal

memory
: Write configuration to the file (same as write file)

1.1.11 write terminal

Command

```
write terminal
```

Parameters

write
: Write running configuration to memory, network, or terminal

terminal
: Write to terminal

1.2 view

The view node is the default node when connecting to the VTY interface. This node does not require any additional permission and allows to introspect the application.

1.2.1 bssgp bvc nsei <0-65535> bvci <0-65535> reset

Command

```
bssgp bvc nsei <0-65535> bvci <0-65535> reset
```

Parameters

bssgp
: Initiate BVC RESET procedure for a given NSEI and BVCI

bvc
: Filter based on BSSGP Virtual Connection

nsei
: NSEI of the BVC to be filtered

<0-65535>
: Network Service Entity Identifier (NSEI)

bvci
: BVCI of the BVC to be filtered

<0-65535>
: BSSGP Virtual Connection Identifier (BVCI)

reset
: Perform reset procedure

1.2.2 enable [expert-mode]

Command

```
enable [expert-mode]
```

Parameters

enable
: Turn on privileged mode command

[expert-mode]
: Enable the expert mode (show hidden commands)

1.2.3 logging color (0|1)

Command

```
logging color (0|1)
```

Parameters

logging
: Configure logging

color
: Configure color-printing for log messages

0
: Don't use color for printing messages

1
: Use color for printing messages

1.2.4 logging disable

Command

```
logging disable
```

Parameters

logging
: Configure logging

disable
: Disables logging to this vty

1.2.5 logging enable

This command is required to make logging commands available on the telnet VTY.

Command

```
logging enable
```

Parameters

logging
: Configure logging

enable
: Enables logging to this vty

1.2.6 logging filter all (0|1)

Disable/enable general log output on a given target. Typically, 'logging filter all 1' allows to see the usual log output on a given target. Setting to '0' can be useful when logging to the telnet VTY console: mute all log output to allow typing VTY commands on the telnet prompt without interference from log output; 'logging filter all 1' then re-enables logging in the same log output configuration as before. Some applications provide more specific filters, e.g. to log a given IMSI only. To employ such filters, set 'logging filter all 0' to disable general logging, and then enable a more specific filter instead.

Command

```
logging filter all (0|1)
```

Parameters

logging
: Configure logging

filter
: Filter log messages

all
: Do you want to log all messages?

0
: Only print messages matched by other filters

1
: Bypass filter and print all messages

1.2.7 logging filter bvc nsei <0-65535> bvci <0-65535>

Command

```
logging filter bvc nsei <0-65535> bvci <0-65535>
```

Parameters

logging
: Configure logging

filter
: Filter log messages

bvc
: Filter based on BSSGP Virtual Connection

nsei
: NSEI of the BVC to be filtered

<0-65535>
: Network Service Entity Identifier (NSEI)

bvci
: BVCI of the BVC to be filtered

<0-65535>
: BSSGP Virtual Connection Identifier (BVCI)

1.2.8 logging filter nse nsei <0-65535>

Command

```
logging filter nse nsei <0-65535>
```

Parameters

logging
: Configure logging

filter
: Filter log messages

nse
: Filter based on NS Entity

nsei
: Identify NSE by NSEI

<0-65535>
: Numeric identifier

1.2.9 logging filter nsvc nsvci <0-65535>

Command

```
logging filter nsvc nsvci <0-65535>
```

Parameters

logging
: Configure logging

filter
: Filter log messages

nsvc
: Filter based on NS Virtual Connection

nsvci
: Identify NS-VC by NSVCI

<0-65535>
: Numeric identifier

1.2.10 logging level (mm|pag|meas|ref|gprs|llc|sndcp|slhc|ranap|sua|v42bis|gtp|rim|ra|l...

Command

```
logging level (mm|pag|meas|ref|gprs|llc|sndcp|slhc|ranap|sua|v42bis|gtp|rim|ra|lglobal| ↩
    llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats|lgsup|loap|lss7|lsccp|lsua|lm3ua| ↩
    lmgcp|ljibuf|lrspro|lns|lbssgp|lnsdata|lnssignal|liuup|lpfcp|lcsn1|lio|ltcap) ( ↩
    debug|info|notice|error|fatal)
```

Parameters

logging
: Configure logging

level
: Set the log level for a specified category

mm
: Layer3 Mobility Management (MM)

pag
: Paging Subsystem

meas
: Radio Measurement Processing

ref
: Reference Counting

gprs
: GPRS Packet Service

llc
: GPRS Logical Link Control Protocol (LLC)

sndcp
: GPRS Sub-Network Dependent Control Protocol (SNDCP)

slhc
: RFC1144 TCP/IP Header compression (SLHC)

ranap
: RAN Application Part (RANAP)

sua
: SCCP User Adaptation (SUA)

v42bis
: V.42bis data compression (SNDCP)

gtp
: GPRS Tunnelling Protocol (GTP)

rim
: RAN Information Management (RIM)

ra
: Routing Area

lglobal
: Library-internal global log family

llapd
: LAPD in libosmogsm

linp
: A-bis Intput Subsystem

lmux
: A-bis B-Subchannel TRAU Frame Multiplex

lmi
: A-bis Input Driver for Signalling

lmib
: A-bis Input Driver for B-Channels (voice)

lsms
: Layer3 Short Message Service (SMS)

lctrl
: Control Interface

lgtp
: GPRS GTP library

lstats
: Statistics messages and logging

lgsup
: Generic Subscriber Update Protocol

loap
: Osmocom Authentication Protocol

lss7
: libosmo-sigtran Signalling System 7

lsccp
: libosmo-sigtran SCCP Implementation

lsua
: libosmo-sigtran SCCP User Adaptation

lm3ua
: libosmo-sigtran MTP3 User Adaptation

lmgcp
: libosmo-mgcp Media Gateway Control Protocol

ljibuf
: libosmo-netif Jitter Buffer

lrspro
: Remote SIM protocol

lns
: GPRS NS layer

lbssgp
: GPRS BSSGP layer

lnsdata
: GPRS NS layer data PDU

lnssignal
: GPRS NS layer signal PDU

liuup
: Iu UP layer

lpfcp
: libosmo-pfcp Packet Forwarding Control Protocol

lcsn1
: libosmo-csn1 Concrete Syntax Notation 1 codec

lio
: libosmocore IO Subsystem

ltcap
: TCAP

debug
: Log debug messages and higher levels

info
: Log informational messages and higher levels

notice
: Log noticeable messages and higher levels

error
: Log error messages and higher levels

fatal
: Log only fatal messages

1.2.11 logging level force-all (debug|info|notice|error|fatal)

Command

```
logging level force-all (debug|info|notice|error|fatal)
```

Parameters

logging
: Configure logging

level
: Set the log level for a specified category

force-all
: Globally force all logging categories to a specific level. This is released by the 'no logging level force-all' command. Note: any 'logging level <category> <level>' commands will have no visible effect after this, until the forced level is released.

debug
: Log debug messages and higher levels

info
: Log informational messages and higher levels

notice
: Log noticeable messages and higher levels

error
: Log error messages and higher levels

fatal
: Log only fatal messages

1.2.12 logging level set-all (debug|info|notice|error|fatal)

Command

```
logging level set-all (debug|info|notice|error|fatal)
```

Parameters

logging
: Configure logging

level
: Set the log level for a specified category

set-all
: Once-off set all categories to the given log level. There is no single command to take back these changes -- each category is set to the given level, period.

debug
: Log debug messages and higher levels

info
: Log informational messages and higher levels

notice
: Log noticeable messages and higher levels

error
: Log error messages and higher levels

fatal
: Log only fatal messages

1.2.13 logging print category (0|1)

Command

```
logging print category (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

category
: Configure log message

0
: Don't prefix each log message

1
: Prefix each log message with category/subsystem name

1.2.14 logging print category-hex (0|1)

Command

```
logging print category-hex (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

category-hex
: Configure log message

0
: Don’t prefix each log message

1
: Prefix each log message with category/subsystem nr in hex (’<000b>’)

1.2.15 logging print extended-timestamp (0|1)

Command

```
logging print extended-timestamp (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

extended-timestamp
: Configure log message timestamping

0
: Don’t prefix each log message

1
: Prefix each log message with current timestamp with YYYYMMDDhhmmssnnn

1.2.16 logging print file (0|1|basename) [last]

Command

```
logging print file (0|1|basename) [last]
```

Parameters

logging
: Configure logging

print
: Log output settings

file
: Configure log message

0
: Don't prefix each log message

1
: Prefix each log message with the source file and line

basename
: Prefix each log message with the source file's basename (strip leading paths) and line

[last]
: Log source file info at the end of a log line. If omitted, log source file info just before the log text.

1.2.17 logging print level (0|1)

Command

```
logging print level (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

level
: Configure log message

0
: Don't prefix each log message

1
: Prefix each log message with the log level name

1.2.18 logging print thread-id (0|1)

Command

```
logging print thread-id (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

thread-id
: Configure log message logging Thread ID

0
: Don't prefix each log message

1
: Prefix each log message with current Thread ID

1.2.19 logging set-log-mask MASK

Command

```
logging set-log-mask MASK
```

Parameters

logging
: Configure logging

set-log-mask
: Set the logmask of this logging target

MASK
: List of logging categories to log, e.g. 'abc:mno:xyz'. Available log categories depend on the specific application, refer to the 'logging level' command. Optionally add individual log levels like 'abc,1:mno,3:xyz,5', where the level numbers are LOGL_DEBUG=1 LOGL_INFO=3 LOGL_NOTICE=5 LOGL_ERROR=7 LOGL_FATAL=8

1.2.20 logging timestamp (0|1)

Command

```
logging timestamp (0|1)
```

Parameters

logging
: Configure logging

timestamp
: Configure log message timestamping

0
: Don't prefix each log message

1
: Prefix each log message with current timestamp

1.2.21 logp (mm|pag|meas|ref|gprs|llc|sndcp|slhc|ranap|sua|v42bis|gtp|rim|ra|lglobal|ll...

Command

```
logp (mm|pag|meas|ref|gprs|llc|sndcp|slhc|ranap|sua|v42bis|gtp|rim|ra|lglobal|llapd| ↩
    linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats|lgsup|loap|lss7|lsccp|lsua|lm3ua|lmgcp| ↩
    ljibuf|lrspro|lns|lbssgp|lnsdata|lnssignal|liuup|lpfcp|lcsn1|lio|ltcap) (debug|info ↩
    |notice|error|fatal) .LOGMESSAGE
```

Parameters

logp
: Print a message on all log outputs; useful for placing markers in test logs

mm
: Layer3 Mobility Management (MM)

pag
: Paging Subsystem

meas
: Radio Measurement Processing

ref
: Reference Counting

gprs
: GPRS Packet Service

llc
: GPRS Logical Link Control Protocol (LLC)

sndcp
: GPRS Sub-Network Dependent Control Protocol (SNDCP)

slhc
: RFC1144 TCP/IP Header compression (SLHC)

ranap
: RAN Application Part (RANAP)

sua
: SCCP User Adaptation (SUA)

v42bis
: V.42bis data compression (SNDCP)

gtp
: GPRS Tunnelling Protocol (GTP)

rim
: RAN Information Management (RIM)

ra
: Routing Area

lglobal
: Library-internal global log family

llapd
: LAPD in libosmogsm

linp
: A-bis Intput Subsystem

lmux
: A-bis B-Subchannel TRAU Frame Multiplex

lmi
: A-bis Input Driver for Signalling

lmib
: A-bis Input Driver for B-Channels (voice)

lsms
: Layer3 Short Message Service (SMS)

lctrl
: Control Interface

lgtp
: GPRS GTP library

lstats
: Statistics messages and logging

lgsup
: Generic Subscriber Update Protocol

loap
: Osmocom Authentication Protocol

lss7
: libosmo-sigtran Signalling System 7

lsccp
: libosmo-sigtran SCCP Implementation

lsua
: libosmo-sigtran SCCP User Adaptation

lm3ua
: libosmo-sigtran MTP3 User Adaptation

lmgcp
: libosmo-mgcp Media Gateway Control Protocol

ljibuf
: libosmo-netif Jitter Buffer

lrspro
: Remote SIM protocol

lns
: GPRS NS layer

lbssgp
: GPRS BSSGP layer

lnsdata
: GPRS NS layer data PDU

lnssignal
: GPRS NS layer signal PDU

liuup
: Iu UP layer

lpfcp
: libosmo-pfcp Packet Forwarding Control Protocol

lcsn1
: libosmo-csn1 Concrete Syntax Notation 1 codec

lio
: libosmocore IO Subsystem

ltcap
: TCAP

debug
: Log debug messages and higher levels

info
: Log informational messages and higher levels

notice
: Log noticeable messages and higher levels

error
: Log error messages and higher levels

fatal
: Log only fatal messages

.LOGMESSAGE
: Arbitrary message to log on given category and log level

1.2.22 no logging level force-all

Command

```
no logging level force-all
```

Parameters

no
: Negate a command or set its defaults

logging
: Configure logging

level
: Set the log level for a specified category

force-all
: Release any globally forced log level set with 'logging level force-all <level>'

1.2.23 show alarms

Command

```
show alarms
```

Parameters

show
: Show running system information

alarms
: Show current logging configuration

1.2.24 show asciidoc counters

Command

```
show asciidoc counters
```

Parameters

show
: Show running system information

asciidoc
: Asciidoc generation

counters
: Generate table of all registered counters

1.2.25 show bssgp

Command

```
show bssgp
```

Parameters

show
: Show running system information

bssgp
: Show information about the BSSGP protocol

1.2.26 show bssgp nsei <0-65535> [stats]

Command

```
show bssgp nsei <0-65535> [stats]
```

Parameters

show
: Show running system information

bssgp
: Show information about the BSSGP protocol

nsei
: Show all BVCs on one NSE

<0-65535>
: The NSEI

[stats]
: Include Statistics

1.2.27 show bssgp stats

Command

```
show bssgp stats
```

Parameters

show
: Show running system information

bssgp
: Show information about the BSSGP protocol

stats
: Include statistics

1.2.28 show cpu-sched threads

Command

```
show cpu-sched threads
```

Parameters

show
: Show running system information

cpu-sched
: Show Sched section information

threads
: Show information about running threads)

1.2.29 show cs7 (sua|m3ua|ipa) (sctp|tcp) [<0-65534>]

Command

```
show cs7 (sua|m3ua|ipa) (sctp|tcp) [<0-65534>]
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

sua
: SCCP User Adaptation

m3ua
: MTP3 User Adaptation

ipa
: IPA Multiplex (SCCP Lite)

sctp
: SCTP (Stream Control Transmission Protocol)

tcp
: TCP (Transmission Control Protocol)

[<0-65534>]
: Local Port Number

1.2.30 show cs7 (sua|m3ua|ipa) [<0-65534>]

Command

```
show cs7 (sua|m3ua|ipa) [<0-65534>]
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

sua
: SCCP User Adaptation

m3ua
: MTP3 User Adaptation

ipa
: IPA Multiplex (SCCP Lite)

[<0-65534>]
: Local Port Number

1.2.31 show cs7 config

Command

```
show cs7 config
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

config
: Currently running cs7 configuration

1.2.32 show cs7 instance <0-15> as (active|all|m3ua|sua)

Command

```
show cs7 instance <0-15> as (active|all|m3ua|sua)
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

as
: Application Server (AS)

active
: Display all active ASs

all
: Display all ASs (default)

m3ua
: Display all m3ua ASs

sua
: Display all SUA ASs

1.2.33 show cs7 instance <0-15> as binding-table name AS_NAME

Command

```
show cs7 instance <0-15> as binding-table name AS_NAME
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

as
: Application Server (AS)

binding-table
: Display binding table

name
: Look up AS with a given name

AS_NAME
: Name of the Application Server (AS)

1.2.34 show cs7 instance <0-15> as name AS_NAME

Command

```
show cs7 instance <0-15> as name AS_NAME
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

as
: Application Server (AS)

name
: Look up AS with a given name

AS_NAME
: Name of the Application Server (AS)

1.2.35 show cs7 instance <0-15> asp

Command

```
show cs7 instance <0-15> asp
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

asp
: Application Server Process (ASP)

1.2.36 show cs7 instance <0-15> asp name ASP_NAME

Command

```
show cs7 instance <0-15> asp name ASP_NAME
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
An instance of the SS7 stack

asp
Application Server Process (ASP)

name
Lookup ASP with a given name

ASP_NAME
Name of the Application Server Process (ASP)

1.2.37 show cs7 instance <0-15> asp-assoc-status

Command

```
show cs7 instance <0-15> asp-assoc-status
```

Parameters

show
Show running system information

cs7
ITU-T Signaling System 7

instance
An instance of the SS7 stack

<0-15>
An instance of the SS7 stack

asp-assoc-status
Application Server Process (ASP) SCTP association status

1.2.38 show cs7 instance <0-15> asp-assoc-status name ASP_NAME

Command

```
show cs7 instance <0-15> asp-assoc-status name ASP_NAME
```

Parameters

show
Show running system information

cs7
ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

asp-assoc-status
: Application Server Process (ASP) SCTP association information

name
: Lookup ASP with a given name

ASP_NAME
: Name of the Application Server Process (ASP)

1.2.39 show cs7 instance <0-15> asp-remaddr

Command

```
show cs7 instance <0-15> asp-remaddr
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

asp-remaddr
: Application Server Process (ASP) remote addresses information

1.2.40 show cs7 instance <0-15> asp-remaddr name ASP_NAME

Command

```
show cs7 instance <0-15> asp-remaddr name ASP_NAME
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

asp-remaddr
: Application Server Process (ASP) remote addresses information

name
: Lookup ASP with a given name

ASP_NAME
: Name of the Application Server Process (ASP)

1.2.41 show cs7 instance <0-15> route [POINT_CODE]

Command

```
show cs7 instance <0-15> route [POINT_CODE]
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

route
: Routing Table

[POINT_CODE]
: Destination Point Code

1.2.42 show cs7 instance <0-15> route binding-table [POINT_CODE] [all-matches]

Command

```
show cs7 instance <0-15> route binding-table [POINT_CODE] [all-matches]
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

route
: Routing Table

binding-table
: Display binding table

[POINT_CODE]
: Destination Point Code

[all-matches]
: Display all matching Combination Links

1.2.43 show cs7 instance <0-15> route-lookup POINT_CODE from POINT_CODE sls <0-15> [lis...

Command

```
show cs7 instance <0-15> route-lookup POINT_CODE from POINT_CODE sls <0-15> [list-asps]
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

route-lookup
: Look up route

POINT_CODE
: Destination PC

from
: From

POINT_CODE
: Origin PC

sls
: SLS

<0-15>
: SLS value

[list-asps]
: List ASPs of the AS if route points to an AS

1.2.44 show cs7 instance <0-15> sccp addressbook

Command

```
show cs7 instance <0-15> sccp addressbook
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

sccp
: Signalling Connection Control Part

addressbook
: List all SCCP addressbook entries

1.2.45 show cs7 instance <0-15> sccp connections

Command

```
show cs7 instance <0-15> sccp connections
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

sccp
: Signalling Connection Control Part

connections
: Show List of active SCCP connections

1.2.46 show cs7 instance <0-15> sccp ssn <0-65535>

Command

```
show cs7 instance <0-15> sccp ssn <0-65535>
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

sccp
: Signalling Connection Control Part

ssn
: Find an SCCP User registered for the given SSN

<0-65535>
: Subsystem Number (SSN)

1.2.47 show cs7 instance <0-15> sccp timers

Command

```
show cs7 instance <0-15> sccp timers
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

sccp
: Signaling Connection Control Part

timers
: Show List of SCCP timers

1.2.48 show cs7 instance <0-15> sccp users

Command

```
show cs7 instance <0-15> sccp users
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

sccp
: Signalling Connection Control Part

users
: Show List of SCCP Users registered

1.2.49 show cs7 instance <0-15> users

Command

```
show cs7 instance <0-15> users
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

users
: User Table

1.2.50 show history

Command

```
show history
```

Parameters

show
: Show running system information

history
: Display the session command history

1.2.51 show llc

Command

```
show llc
```

Parameters

show
: Show running system information

llc
: Display information about the LLC protocol

1.2.52 show logging vty

Command

```
show logging vty
```

Parameters

show
: Show running system information

logging
: Show current logging configuration

vty
: Show current logging configuration for this vty

1.2.53 show mm-context all [pdp]

Command

```
show mm-context all [pdp]
```

Parameters

show
: Show running system information

mm-context
: MM Context

all
: All MM Contexts

[pdp]
: Include PDP Context Information

1.2.54 show mm-context imsi IMSI [pdp]

Command

```
show mm-context imsi IMSI [pdp]
```

Parameters

show
: Show running system information

mm-context
: MM Context

imsi
: Identify by IMSI

IMSI
: IMSI of the MM Context

[pdp]
: Include PDP Context Information

1.2.55 show ns (nsei|nsvc) <0-65535> [stats]

Command

```
show ns (nsei|nsvc) <0-65535> [stats]
```

Parameters

show
: Show running system information

ns
: Display information about the NS protocol

nsei
: Select one NSE by its NSE Identifier

nsvc
: Select one NSE by its NS-VC Identifier

<0-65535>
: The Identifier of selected type

[stats]
: Include Statistics

1.2.56 show ns binds [stats]

Command

```
show ns binds [stats]
```

Parameters

show
: Show running system information

ns
: Display information about the NS protocol

binds
: Display information about the NS protocol binds

[stats]
: Include statistic

1.2.57 show ns entities [stats]

Command

```
show ns entities [stats]
```

Parameters

show
: Show running system information

ns
: Display information about the NS protocol

entities
: Display information about the NS protocol entities (NSEs)

[stats]
: Include statistics

1.2.58 show ns persistent

Command

```
show ns persistent
```

Parameters

show
: Show running system information

ns
: Display information about the NS protocol

persistent
: Show only persistent NS

1.2.59 show online-help

Command

```
show online-help
```

Parameters

show
: Show running system information

online-help
: Online help

1.2.60 show pdp-context all

Command

```
show pdp-context all
```

Parameters

show
: Show running system information

pdp-context
: Display information on PDP Context

all
: Show everything

1.2.61 show pid

Command

```
show pid
```

Parameters

show
: Show running system information

pid
: Displays the process ID

1.2.62 show rate-counters [skip-zero]

Command

```
show rate-counters [skip-zero]
```

Parameters

show
: Show running system information

rate-counters
: Show all rate counters

[skip-zero]
: Skip items with total count zero

1.2.63 show runtime

Command

```
show runtime
```

Parameters

show
: Show running system information

runtime
: Display runtime information

1.2.64 show sgsn

Command

```
show sgsn
```

Parameters

show
: Show running system information

sgsn
: Display information about the SGSN

1.2.65 show sndcp

Command

```
show sndcp
```

Parameters

show
: Show running system information

sndcp
: Display information about the SNDCP protocol

1.2.66 show stats [skip-zero]

Command

```
show stats [skip-zero]
```

Parameters

show
: Show running system information

stats
: Show statistical values

[skip-zero]
: Skip items with total count zero

1.2.67 show stats level (global|peer|subscriber) [skip-zero]

Command

```
show stats level (global|peer|subscriber) [skip-zero]
```

Parameters

show
: Show running system information

stats
: Show statistical values

level
: Set the maximum group level

global
: Show global groups only

peer
: Show global and network peer related groups

subscriber
: Show global, peer, and subscriber groups

[skip-zero]
: Skip items with total count zero

1.2.68 show subscriber cache

Command

```
show subscriber cache
```

Parameters

show
: Show running system information

subscriber
: Show information about subscribers

cache
: Display contents of subscriber cache

1.2.69 show talloc-context (application|global|all) (full|brief|DEPTH)

Command

```
show talloc-context (application|global|all) (full|brief|DEPTH)
```

Parameters

show
: Show running system information

talloc-context
: Show talloc memory hierarchy

application
: Application's context

global
: Global context (OTC_GLOBAL)

all
: All contexts, if NULL-context tracking is enabled

full
: Display a full talloc memory hierarchy

brief
: Display a brief talloc memory hierarchy

DEPTH
: Specify required maximal depth value

1.2.70 show talloc-context (application|global|all) (full|brief|DEPTH) filter REGEXP

Command

```
show talloc-context (application|global|all) (full|brief|DEPTH) filter REGEXP
```

Parameters

show
: Show running system information

talloc-context
: Show talloc memory hierarchy

application
: Application's context

global
: Global context (OTC_GLOBAL)

all
: All contexts, if NULL-context tracking is enabled

full
: Display a full talloc memory hierarchy

brief
: Display a brief talloc memory hierarchy

DEPTH
: Specify required maximal depth value

filter
: Filter chunks using regular expression

REGEXP
: Regular expression

1.2.71 show talloc-context (application|global|all) (full|brief|DEPTH) tree ADDRESS

Command

```
show talloc-context (application|global|all) (full|brief|DEPTH) tree ADDRESS
```

Parameters

show
: Show running system information

talloc-context
: Show talloc memory hierarchy

application
: Application's context

global
: Global context (OTC_GLOBAL)

all
: All contexts, if NULL-context tracking is enabled

full
: Display a full talloc memory hierarchy

brief
: Display a brief talloc memory hierarchy

DEPTH
: Specify required maximal depth value

tree
: Display only a specific memory chunk

ADDRESS
: Chunk address (e.g. 0xdeadbeef)

1.2.72 show timer [TNNNN]

Command

```
show timer [TNNNN]
```

Parameters

show
: Show running system information

timer
: Show timers

[TNNNN]
: T- or X-timer-number -- 3GPP compliant timer number of the format '1234' or 'T1234' or 't1234'; Osmocom-specific timer number of the format: 'X1234' or 'x1234'.

1.2.73 show timer gtp [TNNNN]

Command

```
show timer gtp [TNNNN]
```

Parameters

show

Show running system information

timer

Show timers

gtp

GTP (libgtp) timers

[TNNNN]

T- or X-timer-number -- 3GPP compliant timer number of the format ’1234’ or ’T1234’ or ’t1234’; Osmocom-specific timer number of the format: ’X1234’ or ’x1234’.

1.2.74 show uptime

Command

```
show uptime
```

Parameters

show

Show running system information

uptime

Displays how long the program has been running

1.2.75 show version

Command

```
show version
```

Parameters

show

Show running system information

version

Displays program version

1.2.76 terminal length <0-512>

Command

```
terminal length <0-512>
```

Parameters

terminal
: Set terminal line parameters

length
: Set number of lines on a screen

<0-512>
: Number of lines on screen (0 for no pausing)

1.2.77 terminal no length

Command

```
terminal no length
```

Parameters

terminal
: Set terminal line parameters

no
: Negate a command or set its defaults

length
: Set number of lines on a screen

1.2.78 who

Command

```
who
```

Parameters

who
: Display who is on vty

1.3 enable

The enable node is a privileged node, allowing to make changes to the configuration and to access further commands like 'configure'. All commands seen on the view node are also available here.

1.3.1 bssgp bvc nsei <0-65535> bvci <0-65535> reset

Command

```
bssgp bvc nsei <0-65535> bvci <0-65535> reset
```

Parameters

bssgp
: Initiate BVC RESET procedure for a given NSEI and BVCI

bvc
: Filter based on BSSGP Virtual Connection

nsei
: NSEI of the BVC to be filtered

<0-65535>
: Network Service Entity Identifier (NSEI)

bvci
: BVCI of the BVC to be filtered

<0-65535>
: BSSGP Virtual Connection Identifier (BVCI)

reset
: Perform reset procedure

1.3.2 configure [terminal]

Command

```
configure [terminal]
```

Parameters

configure
: Configuration from vty interface

[terminal]
: Configuration terminal

1.3.3 copy running-config startup-config

Command

```
copy running-config startup-config
```

Parameters

copy
: Copy configuration

running-config
: Copy running config to...

startup-config
: Copy running config to startup config (same as write file)

1.3.4 cs7 instance <0-15> asp NAME audit point-code POINT_CODE

Command

```
cs7 instance <0-15> asp NAME audit point-code POINT_CODE
```

Global attributes

Flag: !
: This command applies immediately

Parameters

cs7
: ITU-T Signaling System 7

instance
: Instance related commands

<0-15>
: SS7 Instance Number

asp
: ASP related commands

NAME
: Name of ASP

audit
: Audit destination Point Code (xUA DAUD)

point-code
: Destination Point Code to audit

POINT_CODE
: Destination Point Code value

1.3.5 cs7 instance <0-15> asp NAME disconnect

Command

```
cs7 instance <0-15> asp NAME disconnect
```

Parameters

cs7
: ITU-T Signaling System 7

instance
: Instance related commands

<0-15>
: SS7 Instance Number

asp
: ASP related commands

NAME
: Name of ASP

disconnect
: Disconnect the ASP (client will reconnect)

1.3.6 disable

Command

```
disable
```

Parameters

disable
: Turn off privileged mode command

1.3.7 logging color (0|1)

Command

```
logging color (0|1)
```

Parameters

logging
: Configure logging

color
: Configure color-printing for log messages

0
: Don't use color for printing messages

1
: Use color for printing messages

1.3.8 logging disable

Command

```
logging disable
```

Parameters

logging
: Configure logging

disable
: Disables logging to this vty

1.3.9 logging enable

This command is required to make logging commands available on the telnet VTY.

Command

```
logging enable
```

Parameters

logging
: Configure logging

enable
: Enables logging to this vty

1.3.10 logging filter all (0|1)

Disable/enable general log output on a given target. Typically, 'logging filter all 1' allows to see the usual log output on a given target. Setting to '0' can be useful when logging to the telnet VTY console: mute all log output to allow typing VTY commands on the telnet prompt without interference from log output; 'logging filter all 1' then re-enables logging in the same log output configuration as before. Some applications provide more specific filters, e.g. to log a given IMSI only. To employ such filters, set 'logging filter all 0' to disable general logging, and then enable a more specific filter instead.

Command

```
logging filter all (0|1)
```

Parameters

logging
: Configure logging

filter
: Filter log messages

all
: Do you want to log all messages?

0
: Only print messages matched by other filters

1
: Bypass filter and print all messages

1.3.11 logging filter bvc nsei <0-65535> bvci <0-65535>

Command

```
logging filter bvc nsei <0-65535> bvci <0-65535>
```

Parameters

logging
: Configure logging

filter
: Filter log messages

bvc
: Filter based on BSSGP Virtual Connection

nsei
: NSEI of the BVC to be filtered

<0-65535>
: Network Service Entity Identifier (NSEI)

bvci
: BVCI of the BVC to be filtered

<0-65535>
: BSSGP Virtual Connection Identifier (BVCI)

1.3.12 logging filter nse nsei <0-65535>

Command

```
logging filter nse nsei <0-65535>
```

Parameters

logging
: Configure logging

filter
: Filter log messages

nse
: Filter based on NS Entity

nsei
: Identify NSE by NSEI

<0-65535>
: Numeric identifier

1.3.13 logging filter nsvc nsvci <0-65535>

Command

```
logging filter nsvc nsvci <0-65535>
```

Parameters

logging
: Configure logging

filter
: Filter log messages

nsvc
: Filter based on NS Virtual Connection

nsvci
: Identify NS-VC by NSVCI

<0-65535>
: Numeric identifier

1.3.14 logging level (mm|pag|meas|ref|gprs|llc|sndcp|slhc|ranap|sua|v42bis|gtp|rim|ra|l...

Command

```
logging level (mm|pag|meas|ref|gprs|llc|sndcp|slhc|ranap|sua|v42bis|gtp|rim|ra|lglobal| ↩
    llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats|lgsup|loap|lss7|lsccp|lsua|lm3ua| ↩
    lmgcp|ljibuf|lrspro|lns|lbssgp|lnsdata|lnssignal|liuup|lpfcp|lcsn1|lio|ltcap) ( ↩
    debug|info|notice|error|fatal)
```

Parameters

logging
: Configure logging

level
: Set the log level for a specified category

mm
: Layer3 Mobility Management (MM)

pag
: Paging Subsystem

meas
: Radio Measurement Processing

ref
: Reference Counting

gprs
: GPRS Packet Service

llc
: GPRS Logical Link Control Protocol (LLC)

sndcp
: GPRS Sub-Network Dependent Control Protocol (SNDCP)

slhc
: RFC1144 TCP/IP Header compression (SLHC)

ranap
: RAN Application Part (RANAP)

sua
: SCCP User Adaptation (SUA)

v42bis
: V.42bis data compression (SNDCP)

gtp
: GPRS Tunnelling Protocol (GTP)

rim
: RAN Information Management (RIM)

ra
: Routing Area

lglobal
: Library-internal global log family

llapd
: LAPD in libosmogsm

linp
: A-bis Intput Subsystem

lmux
: A-bis B-Subchannel TRAU Frame Multiplex

lmi
: A-bis Input Driver for Signalling

lmib
: A-bis Input Driver for B-Channels (voice)

lsms
: Layer3 Short Message Service (SMS)

lctrl
: Control Interface

lgtp
: GPRS GTP library

lstats
: Statistics messages and logging

lgsup
: Generic Subscriber Update Protocol

loap
: Osmocom Authentication Protocol

lss7
: libosmo-sigtran Signalling System 7

lsccp
: libosmo-sigtran SCCP Implementation

lsua
: libosmo-sigtran SCCP User Adaptation

lm3ua
: libosmo-sigtran MTP3 User Adaptation

lmgcp
: libosmo-mgcp Media Gateway Control Protocol

ljibuf
: libosmo-netif Jitter Buffer

lrspro
: Remote SIM protocol

lns
: GPRS NS layer

lbssgp
: GPRS BSSGP layer

lnsdata
: GPRS NS layer data PDU

lnssignal
: GPRS NS layer signal PDU

liuup
: Iu UP layer

lpfcp
: libosmo-pfcp Packet Forwarding Control Protocol

lcsn1
: libosmo-csn1 Concrete Syntax Notation 1 codec

lio
: libosmocore IO Subsystem

ltcap
: TCAP

debug
: Log debug messages and higher levels

info
: Log informational messages and higher levels

notice
: Log noticeable messages and higher levels

error
: Log error messages and higher levels

fatal
: Log only fatal messages

1.3.15 logging level force-all (debug|info|notice|error|fatal)

Command

```
logging level force-all (debug|info|notice|error|fatal)
```

Parameters

logging
: Configure logging

level
: Set the log level for a specified category

force-all
: Globally force all logging categories to a specific level. This is released by the 'no logging level force-all' command. Note: any 'logging level <category> <level>' commands will have no visible effect after this, until the forced level is released.

debug
: Log debug messages and higher levels

info
: Log informational messages and higher levels

notice
: Log noticeable messages and higher levels

error
: Log error messages and higher levels

fatal
: Log only fatal messages

1.3.16 logging level set-all (debug|info|notice|error|fatal)

Command

```
logging level set-all (debug|info|notice|error|fatal)
```

Parameters

logging
: Configure logging

level
: Set the log level for a specified category

set-all
: Once-off set all categories to the given log level. There is no single command to take back these changes -- each category is set to the given level, period.

debug
: Log debug messages and higher levels

info
: Log informational messages and higher levels

notice
: Log noticeable messages and higher levels

error
: Log error messages and higher levels

fatal
: Log only fatal messages

1.3.17 logging print category (0|1)

Command

```
logging print category (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

category
: Configure log message

0
: Don't prefix each log message

1
: Prefix each log message with category/subsystem name

1.3.18 logging print category-hex (0|1)

Command

```
logging print category-hex (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

category-hex
: Configure log message

0
: Don’t prefix each log message

1
: Prefix each log message with category/subsystem nr in hex (’<000b>’)

1.3.19 logging print extended-timestamp (0|1)

Command

```
logging print extended-timestamp (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

extended-timestamp
: Configure log message timestamping

0
: Don’t prefix each log message

1
: Prefix each log message with current timestamp with YYYYMMDDhhmmssnnn

1.3.20 logging print file (0|1|basename) [last]

Command

```
logging print file (0|1|basename) [last]
```

Parameters

logging
: Configure logging

print
: Log output settings

file
: Configure log message

0
: Don't prefix each log message

1
: Prefix each log message with the source file and line

basename
: Prefix each log message with the source file's basename (strip leading paths) and line

[last]
: Log source file info at the end of a log line. If omitted, log source file info just before the log text.

1.3.21 logging print level (0|1)

Command

```
logging print level (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

level
: Configure log message

0
: Don't prefix each log message

1
: Prefix each log message with the log level name

1.3.22 logging print thread-id (0|1)

Command

```
logging print thread-id (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

thread-id
: Configure log message logging Thread ID

0
: Don't prefix each log message

1
: Prefix each log message with current Thread ID

1.3.23 logging set-log-mask MASK

Command

```
logging set-log-mask MASK
```

Parameters

logging
: Configure logging

set-log-mask
: Set the logmask of this logging target

MASK
: List of logging categories to log, e.g. 'abc:mno:xyz'. Available log categories depend on the specific application, refer to the 'logging level' command. Optionally add individual log levels like 'abc,1:mno,3:xyz,5', where the level numbers are LOGL_DEBUG=1 LOGL_INFO=3 LOGL_NOTICE=5 LOGL_ERROR=7 LOGL_FATAL=8

1.3.24 logging timestamp (0|1)

Command

```
logging timestamp (0|1)
```

Parameters

logging
: Configure logging

timestamp
: Configure log message timestamping

0
: Don't prefix each log message

1
: Prefix each log message with current timestamp

1.3.25 logp (mm|pag|meas|ref|gprs|llc|sndcp|slhc|ranap|sua|v42bis|gtp|rim|ra|lglobal|ll...

Command

```
logp (mm|pag|meas|ref|gprs|llc|sndcp|slhc|ranap|sua|v42bis|gtp|rim|ra|lglobal|llapd| ↩
    linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats|lgsup|loap|lss7|lsccp|lsua|lm3ua|lmgcp| ↩
    ljibuf|lrspro|lns|lbssgp|lnsdata|lnssignal|liuup|lpfcp|lcsn1|lio|ltcap) (debug|info ↩
    |notice|error|fatal) .LOGMESSAGE
```

Parameters

logp
: Print a message on all log outputs; useful for placing markers in test logs

mm
: Layer3 Mobility Management (MM)

pag
: Paging Subsystem

meas
: Radio Measurement Processing

ref
: Reference Counting

gprs
: GPRS Packet Service

llc
: GPRS Logical Link Control Protocol (LLC)

sndcp
: GPRS Sub-Network Dependent Control Protocol (SNDCP)

slhc
: RFC1144 TCP/IP Header compression (SLHC)

ranap
: RAN Application Part (RANAP)

sua
: SCCP User Adaptation (SUA)

v42bis
: V.42bis data compression (SNDCP)

gtp
: GPRS Tunnelling Protocol (GTP)

rim
: RAN Information Management (RIM)

ra
: Routing Area

lglobal
: Library-internal global log family

llapd
: LAPD in libosmogsm

linp
: A-bis Intput Subsystem

lmux
: A-bis B-Subchannel TRAU Frame Multiplex

lmi
: A-bis Input Driver for Signalling

lmib
: A-bis Input Driver for B-Channels (voice)

lsms
: Layer3 Short Message Service (SMS)

lctrl
: Control Interface

lgtp
: GPRS GTP library

lstats
: Statistics messages and logging

lgsup
: Generic Subscriber Update Protocol

loap
: Osmocom Authentication Protocol

lss7
: libosmo-sigtran Signalling System 7

lsccp
: libosmo-sigtran SCCP Implementation

lsua
: libosmo-sigtran SCCP User Adaptation

lm3ua
: libosmo-sigtran MTP3 User Adaptation

lmgcp
: libosmo-mgcp Media Gateway Control Protocol

ljibuf
: libosmo-netif Jitter Buffer

lrspro
: Remote SIM protocol

lns
: GPRS NS layer

lbssgp
: GPRS BSSGP layer

lnsdata
: GPRS NS layer data PDU

lnssignal
: GPRS NS layer signal PDU

liuup
: Iu UP layer

lpfcp
: libosmo-pfcp Packet Forwarding Control Protocol

lcsn1
: libosmo-csn1 Concrete Syntax Notation 1 codec

lio
: libosmocore IO Subsystem

ltcap
: TCAP

debug
: Log debug messages and higher levels

info
: Log informational messages and higher levels

notice
: Log noticeable messages and higher levels

error
: Log error messages and higher levels

fatal
: Log only fatal messages

.LOGMESSAGE
: Arbitrary message to log on given category and log level

1.3.26 no logging level force-all

Command

```
no logging level force-all
```

Parameters

no
: Negate a command or set its defaults

logging
: Configure logging

level
: Set the log level for a specified category

force-all
: Release any globally forced log level set with 'logging level force-all <level>'

1.3.27 nse <0-65535> restart-sns

Command

```
nse <0-65535> restart-sns
```

Parameters

nse
: NSE specific commands

<0-65535>
: NS Entity ID (NSEI)

restart-sns
: Restart SNS procedure

1.3.28 nsvc <0-65535> (block|unblock|reset)

Command

```
nsvc <0-65535> (block|unblock|reset)
```

Parameters

nsvc
: NS Virtual Connection

<0-65535>
: NS Virtual Connection ID (NS-VCI)

block
: Block a NSVC. As cause code O&M intervention will be used.

unblock
: Unblock a NSVC. As cause code O&M intervention will be used.

reset
: Reset a NSVC. As cause code O&M intervention will be used.

1.3.29 page imsi IMSI

Command

```
page imsi IMSI
```

Parameters

page
: Send a PS paging request to subscriber

imsi
: Use the IMSI to select the subscriber

IMSI
: The IMSI

1.3.30 show alarms

Command

```
show alarms
```

Parameters

show
: Show running system information

alarms
: Show current logging configuration

1.3.31 show asciidoc counters

Command

```
show asciidoc counters
```

Parameters

show
: Show running system information

asciidoc
: Asciidoc generation

counters
: Generate table of all registered counters

1.3.32 show bssgp

Command

```
show bssgp
```

Parameters

show
: Show running system information

bssgp
: Show information about the BSSGP protocol

1.3.33 show bssgp nsei <0-65535> [stats]

Command

```
show bssgp nsei <0-65535> [stats]
```

Parameters

show
: Show running system information

bssgp
: Show information about the BSSGP protocol

nsei
: Show all BVCs on one NSE

<0-65535>
: The NSEI

[stats]
: Include Statistics

1.3.34 show bssgp stats

Command

```
show bssgp stats
```

Parameters

show
: Show running system information

bssgp
: Show information about the BSSGP protocol

stats
: Include statistics

1.3.35 show cpu-sched threads

Command

```
show cpu-sched threads
```

Parameters

show
: Show running system information

cpu-sched
: Show Sched section information

threads
: Show information about running threads)

1.3.36 show cs7 (sua|m3ua|ipa) (sctp|tcp) [<0-65534>]

Command

```
show cs7 (sua|m3ua|ipa) (sctp|tcp) [<0-65534>]
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

sua
: SCCP User Adaptation

m3ua
: MTP3 User Adaptation

ipa
: IPA Multiplex (SCCP Lite)

sctp
: SCTP (Stream Control Transmission Protocol)

tcp
: TCP (Transmission Control Protocol)

[<0-65534>]
: Local Port Number

1.3.37 show cs7 (sua|m3ua|ipa) [<0-65534>]

Command

```
show cs7 (sua|m3ua|ipa) [<0-65534>]
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

sua
: SCCP User Adaptation

m3ua
: MTP3 User Adaptation

ipa
: IPA Multiplex (SCCP Lite)

[<0-65534>]
: Local Port Number

1.3.38 show cs7 config

Command

```
show cs7 config
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

config
: Currently running cs7 configuration

1.3.39 show cs7 instance <0-15> as (active|all|m3ua|sua)

Command

```
show cs7 instance <0-15> as (active|all|m3ua|sua)
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

as
: Application Server (AS)

active
: Display all active ASs

all
: Display all ASs (default)

m3ua
: Display all m3ua ASs

sua
: Display all SUA ASs

1.3.40 show cs7 instance <0-15> as binding-table name AS_NAME

Command

```
show cs7 instance <0-15> as binding-table name AS_NAME
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

as
: Application Server (AS)

binding-table
: Display binding table

name
: Look up AS with a given name

AS_NAME
: Name of the Application Server (AS)

1.3.41 show cs7 instance <0-15> as name AS_NAME

Command

```
show cs7 instance <0-15> as name AS_NAME
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

as
: Application Server (AS)

name
: Look up AS with a given name

AS_NAME
: Name of the Application Server (AS)

1.3.42 show cs7 instance <0-15> asp

Command

```
show cs7 instance <0-15> asp
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

asp
: Application Server Process (ASP)

1.3.43 show cs7 instance <0-15> asp name ASP_NAME

Command

```
show cs7 instance <0-15> asp name ASP_NAME
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
An instance of the SS7 stack

asp
Application Server Process (ASP)

name
Lookup ASP with a given name

ASP_NAME
Name of the Application Server Process (ASP)

1.3.44 show cs7 instance <0-15> asp-assoc-status

Command

```
show cs7 instance <0-15> asp-assoc-status
```

Parameters

show
Show running system information

cs7
ITU-T Signaling System 7

instance
An instance of the SS7 stack

<0-15>
An instance of the SS7 stack

asp-assoc-status
Application Server Process (ASP) SCTP association status

1.3.45 show cs7 instance <0-15> asp-assoc-status name ASP_NAME

Command

```
show cs7 instance <0-15> asp-assoc-status name ASP_NAME
```

Parameters

show
Show running system information

cs7
ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

asp-assoc-status
: Application Server Process (ASP) SCTP association information

name
: Lookup ASP with a given name

ASP_NAME
: Name of the Application Server Process (ASP)

1.3.46 show cs7 instance <0-15> asp-remaddr

Command

```
show cs7 instance <0-15> asp-remaddr
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

asp-remaddr
: Application Server Process (ASP) remote addresses information

1.3.47 show cs7 instance <0-15> asp-remaddr name ASP_NAME

Command

```
show cs7 instance <0-15> asp-remaddr name ASP_NAME
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

asp-remaddr
: Application Server Process (ASP) remote addresses information

name
: Lookup ASP with a given name

ASP_NAME
: Name of the Application Server Process (ASP)

1.3.48 show cs7 instance <0-15> route [POINT_CODE]

Command

```
show cs7 instance <0-15> route [POINT_CODE]
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

route
: Routing Table

[POINT_CODE]
: Destination Point Code

1.3.49 show cs7 instance <0-15> route binding-table [POINT_CODE] [all-matches]

Command

```
show cs7 instance <0-15> route binding-table [POINT_CODE] [all-matches]
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

route
: Routing Table

binding-table
: Display binding table

[POINT_CODE]
: Destination Point Code

[all-matches]
: Display all matching Combination Links

1.3.50 show cs7 instance <0-15> route-lookup POINT_CODE from POINT_CODE sls <0-15> [lis...

Command

```
show cs7 instance <0-15> route-lookup POINT_CODE from POINT_CODE sls <0-15> [list-asps]
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

route-lookup
: Look up route

POINT_CODE
: Destination PC

from
: From

POINT_CODE
: Origin PC

sls
: SLS

<0-15>
: SLS value

[list-asps]
: List ASPs of the AS if route points to an AS

1.3.51 show cs7 instance <0-15> sccp addressbook

Command

```
show cs7 instance <0-15> sccp addressbook
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

sccp
: Signalling Connection Control Part

addressbook
: List all SCCP addressbook entries

1.3.52 show cs7 instance <0-15> sccp connections

Command

```
show cs7 instance <0-15> sccp connections
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

sccp
: Signalling Connection Control Part

connections
: Show List of active SCCP connections

1.3.53 show cs7 instance <0-15> sccp ssn <0-65535>

Command

```
show cs7 instance <0-15> sccp ssn <0-65535>
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

sccp
: Signalling Connection Control Part

ssn
: Find an SCCP User registered for the given SSN

<0-65535>
: Subsystem Number (SSN)

1.3.54 show cs7 instance <0-15> sccp timers

Command

```
show cs7 instance <0-15> sccp timers
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

sccp
: Signaling Connection Control Part

timers
: Show List of SCCP timers

1.3.55 show cs7 instance <0-15> sccp users

Command

```
show cs7 instance <0-15> sccp users
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

sccp
: Signalling Connection Control Part

users
: Show List of SCCP Users registered

1.3.56 show cs7 instance <0-15> users

Command

```
show cs7 instance <0-15> users
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

instance
: An instance of the SS7 stack

<0-15>
: An instance of the SS7 stack

users
: User Table

1.3.57 show history

Command

```
show history
```

Parameters

show
: Show running system information

history
: Display the session command history

1.3.58 show llc

Command

```
show llc
```

Parameters

show
: Show running system information

llc
: Display information about the LLC protocol

1.3.59 show logging vty

Command

```
show logging vty
```

Parameters

show
: Show running system information

logging
: Show current logging configuration

vty
: Show current logging configuration for this vty

1.3.60 show mm-context all [pdp]

Command

```
show mm-context all [pdp]
```

Parameters

show
: Show running system information

mm-context
: MM Context

all
: All MM Contexts

[pdp]
: Include PDP Context Information

1.3.61 show mm-context imsi IMSI [pdp]

Command

```
show mm-context imsi IMSI [pdp]
```

Parameters

show
: Show running system information

mm-context
: MM Context

imsi
: Identify by IMSI

IMSI
: IMSI of the MM Context

[pdp]
: Include PDP Context Information

1.3.62 show ns (nsei|nsvc) <0-65535> [stats]

Command

```
show ns (nsei|nsvc) <0-65535> [stats]
```

Parameters

show
: Show running system information

ns
: Display information about the NS protocol

nsei
: Select one NSE by its NSE Identifier

nsvc
: Select one NSE by its NS-VC Identifier

<0-65535>
: The Identifier of selected type

[stats]
: Include Statistics

1.3.63 show ns binds [stats]

Command

```
show ns binds [stats]
```

Parameters

show
: Show running system information

ns
: Display information about the NS protocol

binds
: Display information about the NS protocol binds

[stats]
: Include statistic

1.3.64 show ns entities [stats]

Command

```
show ns entities [stats]
```

Parameters

show
: Show running system information

ns
: Display information about the NS protocol

entities
: Display information about the NS protocol entities (NSEs)

[stats]
: Include statistics

1.3.65 show ns persistent

Command

```
show ns persistent
```

Parameters

show
: Show running system information

ns
: Display information about the NS protocol

persistent
: Show only persistent NS

1.3.66 show online-help

Command

```
show online-help
```

Parameters

show
: Show running system information

online-help
: Online help

1.3.67 show pdp-context all

Command

```
show pdp-context all
```

Parameters

show
: Show running system information

pdp-context
: Display information on PDP Context

all
: Show everything

1.3.68 show rate-counters [skip-zero]

Command

```
show rate-counters [skip-zero]
```

Parameters

show
: Show running system information

rate-counters
: Show all rate counters

[skip-zero]
: Skip items with total count zero

1.3.69 show runtime

Command

```
show runtime
```

Parameters

show
: Show running system information

runtime
: Display runtime information

1.3.70 show sgsn

Command

```
show sgsn
```

Parameters

show
: Show running system information

sgsn
: Display information about the SGSN

1.3.71 show sndcp

Command

```
show sndcp
```

Parameters

show
: Show running system information

sndcp
: Display information about the SNDCP protocol

1.3.72 show startup-config

Command

```
show startup-config
```

Parameters

show
: Show running system information

startup-config
: Contentes of startup configuration

1.3.73 show stats [skip-zero]

Command

```
show stats [skip-zero]
```

Parameters

show
: Show running system information

stats
: Show statistical values

[skip-zero]
: Skip items with total count zero

1.3.74 show stats level (global|peer|subscriber) [skip-zero]

Command

```
show stats level (global|peer|subscriber) [skip-zero]
```

Parameters

show
: Show running system information

stats
: Show statistical values

level
: Set the maximum group level

global
: Show global groups only

peer
: Show global and network peer related groups

subscriber
: Show global, peer, and subscriber groups

[skip-zero]
: Skip items with total count zero

1.3.75 show subscriber cache

Command

```
show subscriber cache
```

Parameters

show
: Show running system information

subscriber
: Show information about subscribers

cache
: Display contents of subscriber cache

1.3.76 show talloc-context (application|global|all) (full|brief|DEPTH)

Command

```
show talloc-context (application|global|all) (full|brief|DEPTH)
```

Parameters

show
: Show running system information

talloc-context
: Show talloc memory hierarchy

application
: Application's context

global
: Global context (OTC_GLOBAL)

all
: All contexts, if NULL-context tracking is enabled

full
: Display a full talloc memory hierarchy

brief
: Display a brief talloc memory hierarchy

DEPTH
: Specify required maximal depth value

1.3.77 show talloc-context (application|global|all) (full|brief|DEPTH) filter REGEXP

Command

```
show talloc-context (application|global|all) (full|brief|DEPTH) filter REGEXP
```

Parameters

show
: Show running system information

talloc-context
: Show talloc memory hierarchy

application
: Application's context

global
: Global context (OTC_GLOBAL)

all
: All contexts, if NULL-context tracking is enabled

full
: Display a full talloc memory hierarchy

brief
: Display a brief talloc memory hierarchy

DEPTH
: Specify required maximal depth value

filter
: Filter chunks using regular expression

REGEXP
: Regular expression

1.3.78 show talloc-context (application|global|all) (full|brief|DEPTH) tree ADDRESS

Command

```
show talloc-context (application|global|all) (full|brief|DEPTH) tree ADDRESS
```

Parameters

show
: Show running system information

talloc-context
: Show talloc memory hierarchy

application
: Application's context

global
: Global context (OTC_GLOBAL)

all
: All contexts, if NULL-context tracking is enabled

full
: Display a full talloc memory hierarchy

brief
: Display a brief talloc memory hierarchy

DEPTH
: Specify required maximal depth value

tree
: Display only a specific memory chunk

ADDRESS
: Chunk address (e.g. 0xdeadbeef)

1.3.79 show timer [TNNNN]

Command

```
show timer [TNNNN]
```

Parameters

show
: Show running system information

timer
: Show timers

[TNNNN]
: T- or X-timer-number -- 3GPP compliant timer number of the format '1234' or 'T1234' or 't1234'; Osmocom-specific timer number of the format: 'X1234' or 'x1234'.

1.3.80 show timer gtp [TNNNN]

Command

```
show timer gtp [TNNNN]
```

Parameters

show
: Show running system information

timer
: Show timers

gtp
: GTP (libgtp) timers

[TNNNN]
: T- or X-timer-number -- 3GPP compliant timer number of the format ’1234’ or ’T1234’ or ’t1234’; Osmocom-specific timer number of the format: ’X1234’ or ’x1234’.

1.3.81 show version

Command

```
show version
```

Parameters

show
: Show running system information

version
: Displays program version

1.3.82 shutdown

Command

```
shutdown
```

Parameters

shutdown
: Request a shutdown of the program

1.3.83 stats report

Command

```
stats report
```

Parameters

stats
: Stats related commands

report
: Manurally trigger reporting of stats

1.3.84 stats reset

Command

```
stats reset
```

Parameters

stats
: Stats related commands

reset
: Reset all rate counter stats

1.3.85 terminal length <0-512>

Command

```
terminal length <0-512>
```

Parameters

terminal
: Set terminal line parameters

length
: Set number of lines on a screen

<0-512>
: Number of lines on screen (0 for no pausing)

1.3.86 terminal monitor

Command

```
terminal monitor
```

Parameters

terminal
: Set terminal line parameters

monitor
: Copy debug output to the current terminal line

1.3.87 terminal no length

Command

```
terminal no length
```

Parameters

terminal
: Set terminal line parameters

no
: Negate a command or set its defaults

length
: Set number of lines on a screen

1.3.88 terminal no monitor

Command

```
terminal no monitor
```

Parameters

terminal
: Set terminal line parameters

no
: Negate a command or set its defaults

monitor
: Copy debug output to the current terminal line

1.3.89 update-subscriber imsi IMSI cancel (update-procedure|subscription-withdraw)

Command

```
update-subscriber imsi IMSI cancel (update-procedure|subscription-withdraw)
```

Parameters

update-subscriber
: Update subscriber list

imsi
: Use the IMSI to select the subscriber

IMSI
: The IMSI

cancel
: Cancel (remove) subscriber record

update-procedure
: The MS moved to another SGSN

subscription-withdraw
: The subscription is no longer valid

1.3.90 update-subscriber imsi IMSI create

Command

```
update-subscriber imsi IMSI create
```

Parameters

update-subscriber
: Update subscriber list

imsi
: Use the IMSI to select the subscriber

IMSI
: The IMSI

create
: Create a subscriber entry

1.3.91 update-subscriber imsi IMSI destroy

Command

```
update-subscriber imsi IMSI destroy
```

Parameters

update-subscriber
: Update subscriber list

imsi
: Use the IMSI to select the subscriber

IMSI
: The IMSI

destroy
: Destroy a subscriber entry

1.3.92 update-subscriber imsi IMSI insert auth-triplet <1-5> sres SRES rand RAND kc KC

Command

```
update-subscriber imsi IMSI insert auth-triplet <1-5> sres SRES rand RAND kc KC
```

Parameters

update-subscriber
: Update subscriber list

imsi
: Use the IMSI to select the subscriber

IMSI
: The IMSI

insert
: Insert data into the subscriber record

auth-triplet
: Update authentication triplet

<1-5>
: Triplet index

sres
: Set SRES value

SRES
: SRES value (4 byte) in hex

rand
: Set RAND value

RAND
: RAND value (16 byte) in hex

kc
: Set Kc value

KC
: Kc value (8 byte) in hex

1.3.93 update-subscriber imsi IMSI update-auth-info

Command

```
update-subscriber imsi IMSI update-auth-info
```

Parameters

update-subscriber
: Update subscriber list

imsi
: Use the IMSI to select the subscriber

IMSI
: The IMSI

update-auth-info
: Complete the send authentication info procedure

1.3.94 update-subscriber imsi IMSI update-location-result (ok|system-failure|data-missi...

Command

```
update-subscriber imsi IMSI update-location-result (ok|system-failure|data-missing| ↩
    unexpected-data-value|unknown-subscriber|roaming-not-allowed)
```

Parameters

update-subscriber
: Update subscriber list

imsi
: Use the IMSI to select the subscriber

IMSI
: The IMSI

update-location-result
: Complete the update location procedure

ok
: The update location request succeeded

system-failure
: Force error code SystemFailure

data-missing
: Force error code DataMissing

unexpected-data-value
: Force error code UnexpectedDataValue

unknown-subscriber
: Force error code UnknownSubscriber

roaming-not-allowed
: Force error code RoamingNotAllowed

1.3.95 who

Command

```
who
```

Parameters

who
: Display who is on vty

1.4 config

The config node is the root for all configuration commands, which are identical to the config file format. Changes made on the telnet VTY can be made persistent with the 'write file' command.

1.4.1 banner motd default

Command

```
banner motd default
```

Parameters

banner
: Set banner string

motd
: Strings for motd

default
: Default string

1.4.2 banner motd file [FILE]

Command

```
banner motd file [FILE]
```

Parameters

banner
: Set banner

motd
: Banner for motd

file
: Banner from a file

[FILE]
: Filename

1.4.3 bssgp

Command

```
bssgp
```

Parameters

bssgp
: Configure the GPRS BSS Gateway Protocol

1.4.4 cpu-sched

Command

```
cpu-sched
```

Parameters

cpu-sched
: Configure CPU Scheduler related settings

1.4.5 cs7 instance <0-15>

Command

```
cs7 instance <0-15>
```

Global attributes

Flag: !
: This command applies immediately

Parameters

cs7
: ITU-T Signaling System 7

instance
: Configure a SS7 Instance

<0-15>
: An instance of the SS7 stack

1.4.6 ctrl

Command

```
ctrl
```

Parameters

ctrl
: Configure the Control Interface

1.4.7 enable password (8|) WORD

Command

```
enable password (8|) WORD
```

Parameters

enable
: Modify enable password parameters

password
: Assign the privileged level password

8
: Specifies a HIDDEN password will follow

dummy string

WORD
: The HIDDEN 'enable' password string

1.4.8 enable password LINE

Command

```
enable password LINE
```

Parameters

enable
: Modify enable password parameters

password
: Assign the privileged level password

LINE
: The UNENCRYPTED (cleartext) 'enable' password

1.4.9 hostname WORD

Command

```
hostname WORD
```

Parameters

hostname
: Set system's network name

WORD
: This system's network name

1.4.10 line vty

Command

```
line vty
```

Parameters

line
: Configure a terminal line

vty
: Virtual terminal

1.4.11 log alarms <2-32700>

Command

```
log alarms <2-32700>
```

Parameters

log
: Configure logging sub-system

alarms
: Logging alarms to osmo_strrb

<2-32700>
: Maximum number of messages to log

1.4.12 log file FILENAME [(nonblocking-io|blocking-io|wq)]

Command

```
log file FILENAME [(nonblocking-io|blocking-io|wq)]
```

Parameters

log
: Configure logging sub-system

file
: Logging to text file

FILENAME
: Filename

[nonblocking-io]
: Use non-blocking, synchronous I/O (may lose msgs if file write buffer becomes full) (default)

[blocking-io]
: Use blocking, synchronous I/O (only for debug purposes or when blocking is acceptable)

[wq]
: Use Tx workqueue, asynchronous I/O (may lose msgs if queue becomes full)

1.4.13 log gsmtap [HOSTNAME] [(nonblocking-io|blocking-io|wq)]

Command

```
log gsmtap [HOSTNAME] [(nonblocking-io|blocking-io|wq)]
```

Parameters

log
: Configure logging sub-system

gsmtap
: Logging via GSMTAP

[HOSTNAME]
: Host name to send the GSMTAP logging to (UDP port 4729)

[nonblocking-io]
: Use non-blocking, synchronous I/O (may lose msgs if UDP socket send buffer becomes full) (default)

[blocking-io]
: Use blocking, synchronous I/O (only for debug purposes or when blocking is acceptable)

[wq]
: Use Tx workqueue, asynchronous I/O (may lose msgs if queue becomes full)

1.4.14 log stderr [(nonblocking-io|blocking-io|wq)]

Command

```
log stderr [(nonblocking-io|blocking-io|wq)]
```

Parameters

log
: Configure logging sub-system

stderr
: Logging via STDERR of the process

[nonblocking-io]
: Use non-blocking, synchronous I/O (may lose msgs if file write buffer becomes full) (default)

[blocking-io]
: Use blocking, synchronous I/O (only for debug purposes or when blocking is acceptable)

[wq]
: Use Tx workqueue, asynchronous I/O (may lose msgs if queue becomes full)

1.4.15 log syslog (authpriv|cron|daemon|ftp|lpr|mail|news|user|uucp)

Command

```
log syslog (authpriv|cron|daemon|ftp|lpr|mail|news|user|uucp)
```

Parameters

log
: Configure logging sub-system

syslog
: Logging via syslog

authpriv
: Security/authorization messages facility

cron
: Clock daemon (cron/at) facility

daemon
: General system daemon facility

ftp
: Ftp daemon facility

lpr
: Line printer facility

mail
: Mail facility

news
: News facility

user
: Generic facility

uucp
: UUCP facility

1.4.16 log syslog local <0-7>

Command

```
log syslog local <0-7>
```

Parameters

log
: Configure logging sub-system

syslog
: Logging via syslog

local
: Syslog LOCAL facility

<0-7>
: Local facility number

1.4.17 log systemd-journal [raw]

Command

```
log systemd-journal [raw]
```

Parameters

log
: Configure logging sub-system

systemd-journal
: Logging to systemd-journal

[raw]
: Offload rendering of the meta information (location, category) to systemd

1.4.18 no banner motd

Command

```
no banner motd
```

Parameters

no
: Negate a command or set its defaults

banner
: Set banner string

motd
: Strings for motd

1.4.19 no enable password

Command

```
no enable password
```

Parameters

no
: Negate a command or set its defaults

enable
: Modify enable password parameters

password
: Assign the privileged level password

1.4.20 no hostname [HOSTNAME]

Command

```
no hostname [HOSTNAME]
```

Parameters

no
: Negate a command or set its defaults

hostname
: Reset system's network name

[HOSTNAME]
: Host name of this router

1.4.21 no log alarms

Command

```
no log alarms
```

Parameters

no
: Negate a command or set its defaults

log
: Configure logging sub-system

alarms
: Logging alarms to osmo_strrb

1.4.22 no log file FILENAME

Command

```
no log file FILENAME
```

Parameters

no
: Negate a command or set its defaults

log
: Configure logging sub-system

file
: Logging to text file

FILENAME
: Filename

1.4.23 no log gsmtap [HOSTNAME]

Command

```
no log gsmtap [HOSTNAME]
```

Parameters

no
: Negate a command or set its defaults

log
: Configure logging sub-system

gsmtap
: Logging via GSMTAP

[HOSTNAME]
: Host name to send the GSMTAP logging to (UDP port 4729)

1.4.24 no log stderr

Command

```
no log stderr
```

Parameters

no
: Negate a command or set its defaults

log
: Configure logging sub-system

stderr
: Logging via STDERR of the process

1.4.25 no log syslog

Command

```
no log syslog
```

Parameters

no
: Negate a command or set its defaults

log
: Configure logging sub-system

syslog
: Logging via syslog

1.4.26 no log systemd-journal

Command

```
no log systemd-journal
```

Parameters

no
: Negate a command or set its defaults

log
: Configure logging sub-system

systemd-journal
: Logging to systemd-journal

1.4.27 no service advanced-vty

Command

```
no service advanced-vty
```

Parameters

no
: Negate a command or set its defaults

service
: Set up miscellaneous service

advanced-vty
: Enable advanced mode vty interface

1.4.28 no service terminal-length [<0-512>]

Command

```
no service terminal-length [<0-512>]
```

Parameters

no
: Negate a command or set its defaults

service
: Set up miscellaneous service

terminal-length
: System wide terminal length configuration

[<0-512>]
: Number of lines of VTY (0 means no line control)

1.4.29 no stats reporter log [NAME]

Command

```
no stats reporter log [NAME]
```

Parameters

no
: Negate a command or set its defaults

stats
: Configure stats sub-system

reporter
: Configure a stats reporter

log
: Report to the logger

[NAME]
: Name of the reporter

1.4.30 no stats reporter statsd [NAME]

Command

```
no stats reporter statsd [NAME]
```

Parameters

no
: Negate a command or set its defaults

stats
: Configure stats sub-system

reporter
: Configure a stats reporter

statsd
: Report to a STATSD server

[NAME]
: Name of the reporter

1.4.31 ns

Command

```
ns
```

Parameters

ns
: Configure the GPRS Network Service

1.4.32 password (8|) WORD

Command

```
password (8|) WORD
```

Parameters

password
: Assign the terminal connection password

8
: Specifies a HIDDEN password will follow

dummy string

WORD
: The HIDDEN line password string

1.4.33 password LINE

Command

```
password LINE
```

Parameters

password
: Assign the terminal connection password

LINE
: The UNENCRYPTED (cleartext) line password

1.4.34 service advanced-vty

Command

```
service advanced-vty
```

Parameters

service
: Set up miscellaneous service

advanced-vty
: Enable advanced mode vty interface

1.4.35 service terminal-length <0-512>

Command

```
service terminal-length <0-512>
```

Parameters

service
: Set up miscellaneous service

terminal-length
: System wide terminal length configuration

<0-512>
: Number of lines of VTY (0 means no line control)

1.4.36 sgsn

Command

```
sgsn
```

Parameters

sgsn
: Configure the SGSN

1.4.37 show history

Command

```
show history
```

Parameters

show
: Show running system information

history
: Display the session command history

1.4.38 stats interval <0-65535>

Command

```
stats interval <0-65535>
```

Parameters

stats
: Configure stats sub-system

interval
: Set the reporting interval

<0-65535>
: Interval in seconds (0 disables the reporting interval)

1.4.39 stats reporter log [NAME]

Command

```
stats reporter log [NAME]
```

Parameters

stats
: Configure stats sub-system

reporter
: Configure a stats reporter

log
: Report to the logger

[NAME]
: Name of the reporter

1.4.40 stats reporter statsd [NAME]

Command

```
stats reporter statsd [NAME]
```

Parameters

stats
: Configure stats sub-system

reporter
: Configure a stats reporter

statsd
: Report to a STATSD server

[NAME]
: Name of the reporter

1.4.41 stats-tcp batch-size <1-65535>

Command

```
stats-tcp batch-size <1-65535>
```

Parameters

stats-tcp
: Configure stats sub-system

batch-size
: Set the number of tcp sockets that are processed per stats polling interval

<1-65535>
: Number of sockets per interval

1.4.42 stats-tcp interval <0-65535>

Command

```
stats-tcp interval <0-65535>
```

Parameters

stats-tcp
: Configure stats sub-system

interval
: Set the tcp socket stats polling interval

<0-65535>
: Interval in seconds (0 disables the polling interval)

1.5 config-log

The log node is commonly available in all Osmocom programs and allows configuring logging to stderr and/or log files, including logging category and level filtering as well as output formatting options. Note that the 'logging enable' command is required to make logging commands available on the telnet VTY.

1.5.1 logging color (0|1)

Command

```
logging color (0|1)
```

Parameters

logging
: Configure logging

color
: Configure color-printing for log messages

0
: Don't use color for printing messages

1
: Use color for printing messages

1.5.2 logging filter all (0|1)

Disable/enable general log output on a given target. Typically, 'logging filter all 1' allows to see the usual log output on a given target. Setting to '0' can be useful when logging to the telnet VTY console: mute all log output to allow typing VTY commands on the telnet prompt without interference from log output; 'logging filter all 1' then re-enables logging in the same log output configuration as before. Some applications provide more specific filters, e.g. to log a given IMSI only. To employ such filters, set 'logging filter all 0' to disable general logging, and then enable a more specific filter instead.

Command

```
logging filter all (0|1)
```

Parameters

logging
: Configure logging

filter
: Filter log messages

all
: Do you want to log all messages?

0
: Only print messages matched by other filters

1
: Bypass filter and print all messages

1.5.3 logging filter bvc nsei <0-65535> bvci <0-65535>

Command

```
logging filter bvc nsei <0-65535> bvci <0-65535>
```

Parameters

logging
: Configure logging

filter
: Filter log messages

bvc
: Filter based on BSSGP Virtual Connection

nsei
: NSEI of the BVC to be filtered

<0-65535>
: Network Service Entity Identifier (NSEI)

bvci
: BVCI of the BVC to be filtered

<0-65535>
: BSSGP Virtual Connection Identifier (BVCI)

1.5.4 logging filter nse nsei <0-65535>

Command

```
logging filter nse nsei <0-65535>
```

Parameters

logging
: Configure logging

filter
: Filter log messages

nse
: Filter based on NS Entity

nsei
: Identify NSE by NSEI

<0-65535>
: Numeric identifier

1.5.5 logging filter nsvc nsvci <0-65535>

Command

```
logging filter nsvc nsvci <0-65535>
```

Parameters

logging
: Configure logging

filter
: Filter log messages

nsvc
: Filter based on NS Virtual Connection

nsvci
: Identify NS-VC by NSVCI

<0-65535>
: Numeric identifier

1.5.6 logging level (mm|pag|meas|ref|gprs|llc|sndcp|slhc|ranap|sua|v42bis|gtp|rim|ra|l...

Command

```
logging level (mm|pag|meas|ref|gprs|llc|sndcp|slhc|ranap|sua|v42bis|gtp|rim|ra|lglobal| ↩
    llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats|lgsup|loap|lss7|lsccp|lsua|lm3ua| ↩
    lmgcp|ljibuf|lrspro|lns|lbssgp|lnsdata|lnssignal|liuup|lpfcp|lcsn1|lio|ltcap) ( ↩
    debug|info|notice|error|fatal)
```

Parameters

logging
: Configure logging

level
: Set the log level for a specified category

mm
: Layer3 Mobility Management (MM)

pag
: Paging Subsystem

meas
: Radio Measurement Processing

ref
: Reference Counting

gprs
: GPRS Packet Service

llc
: GPRS Logical Link Control Protocol (LLC)

sndcp
: GPRS Sub-Network Dependent Control Protocol (SNDCP)

slhc
: RFC1144 TCP/IP Header compression (SLHC)

ranap
: RAN Application Part (RANAP)

sua
: SCCP User Adaptation (SUA)

v42bis
: V.42bis data compression (SNDCP)

gtp
: GPRS Tunnelling Protocol (GTP)

rim
: RAN Information Management (RIM)

ra
: Routing Area

lglobal
: Library-internal global log family

llapd
: LAPD in libosmogsm

linp
: A-bis Intput Subsystem

lmux
: A-bis B-Subchannel TRAU Frame Multiplex

lmi
: A-bis Input Driver for Signalling

lmib
: A-bis Input Driver for B-Channels (voice)

lsms
: Layer3 Short Message Service (SMS)

lctrl
: Control Interface

lgtp
: GPRS GTP library

lstats
: Statistics messages and logging

lgsup
: Generic Subscriber Update Protocol

loap
: Osmocom Authentication Protocol

lss7
: libosmo-sigtran Signalling System 7

lsccp
: libosmo-sigtran SCCP Implementation

lsua
: libosmo-sigtran SCCP User Adaptation

lm3ua
: libosmo-sigtran MTP3 User Adaptation

lmgcp
: libosmo-mgcp Media Gateway Control Protocol

ljibuf
: libosmo-netif Jitter Buffer

lrspro
: Remote SIM protocol

lns
: GPRS NS layer

lbssgp
: GPRS BSSGP layer

lnsdata
: GPRS NS layer data PDU

lnssignal
: GPRS NS layer signal PDU

liuup
: Iu UP layer

lpfcp
: libosmo-pfcp Packet Forwarding Control Protocol

lcsn1
: libosmo-csn1 Concrete Syntax Notation 1 codec

lio
: libosmocore IO Subsystem

ltcap
: TCAP

debug
: Log debug messages and higher levels

info
: Log informational messages and higher levels

notice
: Log noticeable messages and higher levels

error
: Log error messages and higher levels

fatal
: Log only fatal messages

1.5.7 logging level force-all (debug|info|notice|error|fatal)

Command

```
logging level force-all (debug|info|notice|error|fatal)
```

Parameters

logging
: Configure logging

level
: Set the log level for a specified category

force-all
: Globally force all logging categories to a specific level. This is released by the 'no logging level force-all' command. Note: any 'logging level <category> <level>' commands will have no visible effect after this, until the forced level is released.

debug
: Log debug messages and higher levels

info
: Log informational messages and higher levels

notice
: Log noticeable messages and higher levels

error
: Log error messages and higher levels

fatal
: Log only fatal messages

1.5.8 logging level set-all (debug|info|notice|error|fatal)

Command

```
logging level set-all (debug|info|notice|error|fatal)
```

Parameters

logging
: Configure logging

level
: Set the log level for a specified category

set-all
: Once-off set all categories to the given log level. There is no single command to take back these changes -- each category is set to the given level, period.

debug
: Log debug messages and higher levels

info
: Log informational messages and higher levels

notice
: Log noticeable messages and higher levels

error
: Log error messages and higher levels

fatal
: Log only fatal messages

1.5.9 logging print category (0|1)

Command

```
logging print category (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

category
: Configure log message

0
: Don't prefix each log message

1
: Prefix each log message with category/subsystem name

1.5.10 logging print category-hex (0|1)

Command

```
logging print category-hex (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

category-hex
: Configure log message

0
: Don’t prefix each log message

1
: Prefix each log message with category/subsystem nr in hex (’<000b>’)

1.5.11 logging print extended-timestamp (0|1)

Command

```
logging print extended-timestamp (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

extended-timestamp
: Configure log message timestamping

0
: Don’t prefix each log message

1
: Prefix each log message with current timestamp with YYYYMMDDhhmmssnnn

1.5.12 logging print file (0|1|basename) [last]

Command

```
logging print file (0|1|basename) [last]
```

Parameters

logging
: Configure logging

print
: Log output settings

file
: Configure log message

0
: Don't prefix each log message

1
: Prefix each log message with the source file and line

basename
: Prefix each log message with the source file's basename (strip leading paths) and line

[last]
: Log source file info at the end of a log line. If omitted, log source file info just before the log text.

1.5.13 logging print level (0|1)

Command

```
logging print level (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

level
: Configure log message

0
: Don't prefix each log message

1
: Prefix each log message with the log level name

1.5.14 logging print thread-id (0|1)

Command

```
logging print thread-id (0|1)
```

Parameters

logging
: Configure logging

print
: Log output settings

thread-id
: Configure log message logging Thread ID

0
: Don't prefix each log message

1
: Prefix each log message with current Thread ID

1.5.15 logging timestamp (0|1)

Command

```
logging timestamp (0|1)
```

Parameters

logging
: Configure logging

timestamp
: Configure log message timestamping

0
: Don't prefix each log message

1
: Prefix each log message with current timestamp

1.5.16 no logging level force-all

Command

```
no logging level force-all
```

Parameters

no
: Negate a command or set its defaults

logging
: Configure logging

level
: Set the log level for a specified category

force-all
: Release any globally forced log level set with 'logging level force-all <level>'

1.6 config-stats

1.6.1 disable

Command

```
disable
```

Parameters

disable
: Disable the reporter

1.6.2 enable

Command

```
enable
```

Parameters

enable
: Enable the reporter

1.6.3 flush-period <0-65535>

Command

```
flush-period <0-65535>
```

Parameters

flush-period

Configure stats sub-system

<0-65535>

Send all stats even if they have not changed (i.e. force the flush)every N-th reporting interval. Set to 0 to disable regular flush (default).

1.6.4 level (global|peer|subscriber)

Command

```
level (global|peer|subscriber)
```

Parameters

level

Set the maximum group level

global

Report global groups only

peer

Report global and network peer related groups

subscriber

Report global, peer, and subscriber groups

1.6.5 local-ip ADDR

Command

```
local-ip ADDR
```

Parameters

local-ip

Set the IP address to which we bind locally

ADDR

IP Address

1.6.6 mtu <100-65535>

Command

```
mtu <100-65535>
```

Parameters

mtu
: Set the maximum packet size

<100-65535>
: Size in byte

1.6.7 no local-ip

Command

```
no local-ip
```

Parameters

no
: Negate a command or set its defaults

local-ip
: Set the IP address to which we bind locally

1.6.8 no mtu

Command

```
no mtu
```

Parameters

no
: Negate a command or set its defaults

mtu
: Set the maximum packet size

1.6.9 no prefix

Command

```
no prefix
```

Parameters

no
: Negate a command or set its defaults

prefix
: Set the item name prefix

1.6.10 prefix PREFIX

Command

```
prefix PREFIX
```

Parameters

prefix
: Set the item name prefix

PREFIX
: The prefix string

1.6.11 remote-ip ADDR

Command

```
remote-ip ADDR
```

Parameters

remote-ip
: Set the remote IP address to which we connect

ADDR
: IP Address

1.6.12 remote-port <1-65535>

Command

```
remote-port <1-65535>
```

Parameters

remote-port
: Set the remote port to which we connect

<1-65535>
: Remote port number

1.7 config-line

1.7.1 bind A.B.C.D [<0-65535>]

Command

```
bind A.B.C.D [<0-65535>]
```

Parameters

bind
: Accept VTY telnet connections on local interface

A.B.C.D
: Local interface IP address (default: 127.0.0.1)

[<0-65535>]
: Local TCP port number

1.7.2 login

Command

```
login
```

Parameters

login
: Enable password checking

1.7.3 no login

Command

```
no login
```

Parameters

no
: Negate a command or set its defaults

login
: Enable password checking

1.8 config-ns

1.8.1 bind (fr|udp) ID

Command

```
bind (fr|udp) ID
```

Parameters

bind
: Configure local Bind

fr
: Frame Relay

udp
: UDP/IP

ID
: Unique identifier for this bind (to reference from NS-VCs, NSEs, ...)

1.8.2 ip-sns-default bind ID

Command

```
ip-sns-default bind ID
```

Parameters

ip-sns-default
: Defaults for dynamically created NSEs created by IP-SNS in SGSN role

bind
: IP SNS binds

ID
: Name of NS udp bind whose IP endpoint will be used as IP-SNS local endpoint. Can be given multiple times.

1.8.3 no bind ID

Command

```
no bind ID
```

Parameters

no
: Negate a command or set its defaults

bind
: Delete a bind

ID
: Unique identifier for this bind

1.8.4 no ip-sns-default bind ID

Command

```
no ip-sns-default bind ID
```

Parameters

no
: Negate a command or set its defaults

ip-sns-default
: Defaults for dynamically created NSEs created by IP-SNS in SGSN role

bind
: IP SNS binds

ID
: Name of NS udp bind whose IP endpoint will be removed as IP-SNS local endpoint.

1.8.5 no nse <0-65535>

Command

```
no nse <0-65535>
```

Parameters

no
: Negate a command or set its defaults

nse
: Delete a Persistent NS Entity

<0-65535>
: NS Entity ID (NSEI)

1.8.6 nse <0-65535> [ip-sns-role-sgsn]

Command

```
nse <0-65535> [ip-sns-role-sgsn]
```

Parameters

nse
: Persistent NS Entity

<0-65535>
: NS Entity ID (NSEI)

[ip-sns-role-sgsn]
: Create NSE in SGSN role (default: BSS)

1.8.7 timer (tns-block|tns-block-retries|tns-reset|tns-reset-retries|tns-test|tns-aliv...

Command

```
timer (tns-block|tns-block-retries|tns-reset|tns-reset-retries|tns-test|tns-alive|tns- ↩
    alive-retries|tsns-prov|tsns-size-retries|tsns-config-retries|tsns-procedures- ↩
    retries) <0-65535>
```

Parameters

timer
: Network Service Timer

tns-block
: (un)blocking Timer (Tns-block) timeout

tns-block-retries
: (un)blocking Timer (Tns-block) number of retries

tns-reset
: Reset Timer (Tns-reset) timeout

tns-reset-retries
: Reset Timer (Tns-reset) number of retries

tns-test
: Test Timer (Tns-test) timeout

tns-alive
: Alive Timer (Tns-alive) timeout

tns-alive-retries
: Alive Timer (Tns-alive) number of retries

tsns-prov
: SNS Provision Timer (Tsns-prov) timeout

tsns-size-retries
: SNS Size number of retries

tsns-config-retries
: SNS Config number of retries

tsns-procedures-retries
: SNS Procedures number of retries

<0-65535>
: Timer Value

1.8.8 txqueue-max-length <1-4096>

Command

```
txqueue-max-length <1-4096>
```

Parameters

txqueue-max-length
: Set the maximum length of the txqueue (for UDP)

<1-4096>
: Maximum length of the txqueue

1.9 config-bssgp

1.10 config-ctrl

1.10.1 bind A.B.C.D [<0-65535>]

Command

```
bind A.B.C.D [<0-65535>]
```

Parameters

bind
: Set bind address to listen for Control connections

A.B.C.D
: Local IP address (default 127.0.0.1)

[<0-65535>]
: Local TCP port number

1.11 config-cs7

1.11.1 as NAME (sua|m3ua|ipa)

Command

```
as NAME (sua|m3ua|ipa)
```

Global attributes

Flag: !

This command applies immediately

Parameters

as

Configure an Application Server

NAME

Name of the Application Server

sua

SCCP User Adaptation

m3ua

MTP3 User Adaptation

ipa

IPA Multiplex (SCCP Lite)

1.11.2 asp NAME <0-65535> <0-65535> (sua|m3ua|ipa)

Command

```
asp NAME <0-65535> <0-65535> (sua|m3ua|ipa)
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

asp

Configure Application Server Process

NAME

Name of ASP

<0-65535>
Remote port number

<0-65535>
Local port number

sua
SCCP User Adaptation

m3ua
MTP3 User Adaptation

ipa
IPA Multiplex (SCCP Lite)

1.11.3 asp NAME <0-65535> <0-65535> (sua|m3ua|ipa) (sctp|tcp)

Command

```
asp NAME <0-65535> <0-65535> (sua|m3ua|ipa) (sctp|tcp)
```

Global attributes

Flag: @
This command applies on VTY node exit

Parameters

asp
Configure Application Server Process

NAME
Name of ASP

<0-65535>
Remote port number

<0-65535>
Local port number

sua
SCCP User Adaptation

m3ua
MTP3 User Adaptation

ipa
IPA Multiplex (SCCP Lite)

sctp
SCTP (Stream Control Transmission Protocol)

tcp
TCP (Transmission Control Protocol)

1.11.4 description .TEXT

Command

```
description .TEXT
```

Parameters

description
: Save human-readable description of the object

.TEXT
: Text until the end of the line

1.11.5 listen (sua|m3ua|ipa) <0-65534> [(sctp|tcp)]

Command

```
listen (sua|m3ua|ipa) <0-65534> [(sctp|tcp)]
```

Global attributes

Flag: !
: This command applies immediately

Parameters

listen
: Configure/Enable xUA Listener

sua
: SCCP User Adaptation

m3ua
: MTP3 User Adaptation

ipa
: IPA Multiplex (SCCP Lite)

<0-65534>
: Port number

[sctp]
: SCTP (Stream Control Transmission Protocol)

[tcp]
: TCP (Transmission Control Protocol)

1.11.6 network-indicator (international | national | reserved | spare)

Command

```
network-indicator (international | national | reserved | spare)
```

Global attributes

Flag: !

This command applies immediately

Parameters

network-indicator

Configure the Network Indicator

international

International Network

national

National Network

reserved

Reserved Network

spare

Spare Network

1.11.7 no as NAME

Command

```
no as NAME
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

as

Disable Application Server

NAME

Name of AS

1.11.8 no asp NAME

Command

```
no asp NAME
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

asp

Disable Application Server Process

NAME

Name of ASP

1.11.9 no listen (sua|m3ua|ipa) <0-65534> [(sctp|tcp)]

Command

```
no listen (sua|m3ua|ipa) <0-65534> [(sctp|tcp)]
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

listen

Disable xUA Listener on given port

sua

SCCP User Adaptation

m3ua

MTP3 User Adaptation

ipa

IPA Multiplex (SCCP Lite)

<0-65534>
Port number

[sctp]
SCTP (Stream Control Transmission Protocol)

[tcp]
TCP (Transmission Control Protocol)

1.11.10 no sccp-address NAME

Command

```
no sccp-address NAME
```

Global attributes

Flag: !
This command applies immediately

Parameters

no
Negate a command or set its defaults

sccp-address
Delete an SCCP addressbook entry

NAME
Name of the SCCP Address

1.11.11 point-code POINT_CODE

Command

```
point-code POINT_CODE
```

Global attributes

Flag: !
This command applies immediately

Parameters

point-code
Configure the local Point Code

POINT_CODE
Point Code

1.11.12 point-code delimiter (default|dash)

Command

```
point-code delimiter (default|dash)
```

Global attributes

Flag: !

This command applies immediately

Parameters

point-code

Point Code

delimiter

Configure Point Code Delimiter

default

Use dot as delimiter

dash

User dash as delimiter

1.11.13 point-code format <1-24> [<1-23>] [<1-22>]

Command

```
point-code format <1-24> [<1-23>] [<1-22>]
```

Global attributes

Flag: !

This command applies immediately

Parameters

point-code

Point Code

format

Configure Point Code Format

<1-24>

Length of first PC component

[<1-23>]

Length of second PC component

[<1-22>]

Length of third PC component

1.11.14 point-code format default

Command

```
point-code format default
```

Global attributes

Flag: !

This command applies immediately

Parameters

point-code

Point Code

format

Configure Point Code Format

default

Default Point Code Format (3.8.3)

1.11.15 sccp max-optional-data (<0-999999>|standard)

Command

```
sccp max-optional-data (<0-999999>|standard)
```

Global attributes

Flag: !

This command applies immediately

Parameters

sccp

Configure SCCP behavior

max-optional-data

Adjust the upper bound for the optional data length (the payload) for CR, CC, CREF and RLSD messages. For any Optional Data part larger than this value in octets, send CR, CC, CREF and RLSD messages without any payload, and send the data payload in a separate Data Form 1 message. ITU-T Q.713 sections 4.2 thru 4.5 define a limit of 128 bytes for the 'Data' parameter. This limit can be adjusted here. May be useful for interop with nonstandard SCCP peers.

<0-999999>

Set a non-standard maximum allowed number of bytes

standard

Use the ITU-T Q.713 4.2 to 4.5 standard value of 128

1.11.16 sccp-address NAME

Command

```
sccp-address NAME
```

Global attributes

Flag: !

This command applies immediately

Parameters

sccp-address

Create/Modify an SCCP addressbook entry

NAME

Name of the SCCP Address

1.11.17 sccp-timer (conn_est|ias|iar|rel|repeat_rel|int|guard|reset|reassembly) <1-99999...

Command

```
sccp-timer (conn_est|ias|iar|rel|repeat_rel|int|guard|reset|reassembly) <1-999999>
```

Global attributes

Flag: !

This command applies immediately

Parameters

sccp-timer

Configure SCCP timer values, see ITU-T Q.714

conn_est

Waiting for connection confirm message, 1 to 2 minutes (default: 60)

ias

Send keep-alive: on an idle connection, delay before sending an Idle Timer message, 5 to 10 minutes (default: 420)

iar

Receive keep-alive: on an idle connection, delay until considering a connection as stale, 11 to 21 minutes (default: 900)

rel

Waiting for release complete message, 10 to 20 seconds (default: 10)

repeat_rel

Waiting for release complete message; or to repeat sending released message after the initial expiry, 10 to 20 seconds (default: 10)

int

Waiting for release complete message; or to release connection resources, freeze the LRN and alert a maintenance function after the initial expiry, extending to 1 minute (default: 60)

guard

Waiting to resume normal procedure for temporary connection sections during the restart procedure, 23 to 25 minutes (default: 1380)

reset

Waiting to release temporary connection section or alert maintenance function after reset request message is sent, 10 to 20 seconds (default: 10)

reassembly

Waiting to receive all the segments of the remaining segments, single segmented message after receiving the first segment, 10 to 20 seconds (default: 10)

<1-999999>

Timer value, in seconds

1.11.18 secondary-pc POINT_CODE

Command

```
secondary-pc POINT_CODE
```

Global attributes

Flag: !

This command applies immediately

Parameters

secondary-pc

Configure the local Secondary Point Code

POINT_CODE

Point Code

1.11.19 sls-opc-dpc [opc-shift] [<0-8>] [dpc-shift] [<0-8>]

Command

```
sls-opc-dpc [opc-shift] [<0-8>] [dpc-shift] [<0-8>]
```

Global attributes

Flag: !

This command applies immediately

Parameters

sls-opc-dpc
: Shift OPC and DPC bits used during routing decision

[opc-shift]
: Shift OPC bits used during routing decision

[<0-8>]
: How many bits from ITU OPC field (starting from least-significant-bit) to skip (default=0). 6 bits are always used

[dpc-shift]
: Shift DPC bits used during routing decision

[<0-8>]
: How many bits from ITU DPC field (starting from least-significant-bit) to skip (default=0). 6 bits are always used

1.11.20 sls-shift <0-6>

Command

```
sls-shift <0-6>
```

Global attributes

Flag: !
: This command applies immediately

Parameters

sls-shift
: Shift SLS bits used during routing decision

<0-6>
: How many bits from derivated 7-bit extended-SLS (OPC, DPC, SLS) field (starting from least-significant-bit) to skip

1.11.21 timer xua (T8) <1-999999>

Command

```
timer xua (T8) <1-999999>
```

Global attributes

Flag: !
: This command applies immediately

Parameters

timer
: Configure CS7 Instance default timer values

xua
: Configure CS7 Instance default xua timer values

T8
: T8 - Transfer prohibited inhibition timer (transient solution) (ms) (default: 1000)

<1-999999>
: Timer value, in seconds

1.11.22 xua rkm routing-key-allocation (static-only|dynamic-permitted)

Command

```
xua rkm routing-key-allocation (static-only|dynamic-permitted)
```

Global attributes

Flag: !
: This command applies immediately

Parameters

xua
: SIGTRAN xxxUA related

rkm
: Routing Key Management

routing-key-allocation
: Routing Key Management Allocation Policy

static-only
: Only static (pre-configured) Routing Keys permitted

dynamic-permitted
: Dynamically allocate Routing Keys for what ASPs request

1.12 config-cs7-as

1.12.1 asp NAME

Command

```
asp NAME
```

Global attributes

Flag: !

This command applies immediately

Parameters

asp

Specify that a given ASP is part of this AS

NAME

Name of ASP to be added to AS

1.12.2 binding-table reset

Command

```
binding-table reset
```

Global attributes

Flag: !

This command applies immediately

Parameters

binding-table

AS Loadshare binding table operations

reset

Reset loadshare binding table

1.12.3 description .TEXT

Command

```
description .TEXT
```

Parameters

description

Save human-readable description of the object

.TEXT

Text until the end of the line

1.12.4 no asp NAME

Command

```
no asp NAME
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

asp

Specify ASP to be removed from this AS

NAME

Name of ASP to be removed

1.12.5 no point-code override (opc|dpc)

Command

```
no point-code override (opc|dpc)
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

point-code

Point Code Specific Features

override

Override (force) a point-code of messages received at the AS

opc

Override Source Point Code of received messages

dpc

Override Destination Point Code of received messages

1.12.6 no traffic-mode

Command

```
no traffic-mode
```

Parameters

no
: Negate a command or set its defaults

traffic-mode
: Remove explicit traffic mode of operation of this AS

1.12.7 point-code override (opc|dpc) PC

Command

```
point-code override (opc|dpc) PC
```

Global attributes

Flag: !
: This command applies immediately

Parameters

point-code
: Point Code Specific Features

override
: Override (force) a point-code of messages received at the AS

opc
: Override Source Point Code of received messages

dpc
: Override Destination Point Code of received messages

PC
: New Point Code

1.12.8 point-code override patch-sccp (disabled|both)

Command

```
point-code override patch-sccp (disabled|both)
```

Global attributes

Flag: !

This command applies immediately

Parameters

point-code

Point Code Specific Features

override

Override (force) a point-code to hard-coded value

patch-sccp

Patch point code values into SCCP called/calling address

disabled

Don't patch any point codes into SCCP called/calling address

both

Patch both origin and destination point codes into SCCP called/calling address

1.12.9 qos-class <0-7>

Command

```
qos-class <0-7>
```

Global attributes

Flag: !

This command applies immediately

Parameters

qos-class

Specity QoS Class of AS

<0-7>

QoS Class

1.12.10 recovery-timeout <1-2000>

Command

```
recovery-timeout <1-2000>
```

Global attributes

Flag: !

This command applies immediately

Parameters

recovery-timeout

Specifies RFC4666 recovery timer T(r) timeout

<1-2000>

Recovery Timeout in Milliseconds

1.12.11 routing-key RCONTEXT DPC

Command

```
routing-key RCONTEXT DPC
```

Global attributes

Flag: !

This command applies immediately

Parameters

routing-key

Define a routing key

RCONTEXT

Routing context number

DPC

Destination Point Code

1.12.12 routing-key RCONTEXT DPC si (aal2|bicc|b-isup|h248|isup|sat-isup|sccp|tup)

Command

```
routing-key RCONTEXT DPC si (aal2|bicc|b-isup|h248|isup|sat-isup|sccp|tup)
```

Global attributes

Flag: !

This command applies immediately

Parameters

routing-key

Define a routing key

RCONTEXT

Routing context number

DPC

Destination Point Code

si

Match on Service Indicator

aal2

ATM Adaption Layer 2

bicc

Bearer Independent Call Control

b-isup

Broadband ISDN User Part

h248

H.248

isup

ISDN User Part

sat-isup

Sattelite ISDN User Part

sccp

Signalling Connection Control Part

tup

Telephony User Part

1.12.13 routing-key RCONTEXT DPC si (aal2|bicc|b-isup|h248|isup|sat-isup|sccp|tup) ssn S...

Command

```
routing-key RCONTEXT DPC si (aal2|bicc|b-isup|h248|isup|sat-isup|sccp|tup) ssn SSN
```

Global attributes

Flag: !

This command applies immediately

Parameters

routing-key

Define a routing key

RCONTEXT

Routing context number

DPC

Destination Point Code

si

Match on Service Indicator

aal2

ATM Adaption Layer 2

bicc

Bearer Independent Call Control

b-isup

Broadband ISDN User Part

h248

H.248

isup

ISDN User Part

sat-isup

Sattelite ISDN User Part

sccp

Signalling Connection Control Part

tup

Telephony User Part

ssn

Match on Sub-System Number

SSN

Sub-System Number to match on

1.12.14 routing-key RCONTEXT DPC ssn SSN

Command

```
routing-key RCONTEXT DPC ssn SSN
```

Global attributes

Flag: !

This command applies immediately

Parameters

routing-key

Define a routing key

RCONTEXT

Routing context number

DPC

Destination Point Code

ssn

Match on Sub-System Number

SSN

Sub-System Number to match on

1.12.15 sls-shift <0-3>

Command

```
sls-shift <0-3>
```

Global attributes

Flag: !

This command applies immediately

Parameters

sls-shift

Shift SLS bits used during routing decision

<0-3>

How many bits from SLS field (starting from least-significant-bit) to skip

1.12.16 traffic-mode (broadcast | roundrobin | override)

Command

```
traffic-mode (broadcast | roundrobin | override)
```

Parameters

traffic-mode
: Specifies traffic mode of operation of the ASP within the AS

broadcast
: Broadcast to all ASP within AS

roundrobin
: Round-Robin between all ASP within AS

override
: Override

1.12.17 traffic-mode loadshare [bindings] [sls] [opc-sls] [opc-shift] [<0-2>]

Command

```
traffic-mode loadshare [bindings] [sls] [opc-sls] [opc-shift] [<0-2>]
```

Parameters

traffic-mode
: Specifies traffic mode of operation of the ASP within the AS

loadshare
: Share Load among all ASP within AS

[bindings]
: Configure Loadshare parameters

[sls]
: Configure Loadshare SLS generation parameters

[opc-sls]
: Generate extended SLS with OPC information

[opc-shift]
: Shift OPC bits used during routing decision

[<0-2>]
: How many bits from ITU OPC field (starting from least-significant-bit) to skip (default=0). 6 bits are always used

1.13 config-cs7-asp

1.13.1 block

Command

```
block
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

block

Allows a SCTP Association with ASP, but doesn't let it become active

1.13.2 description .TEXT

Command

```
description .TEXT
```

Parameters

description

Save human-readable description of the object

.TEXT

Text until the end of the line

1.13.3 destination-audit asp-active

Command

```
destination-audit asp-active
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

destination-audit

Configure ASP Auditing (xUA DAUD)

asp-active

Transmit DAUD after ASP successful activate (for remote PCs in sccp address-book)

1.13.4 local-ip (A.B.C.D|X:X::X:X) [primary]

Command

```
local-ip (A.B.C.D|X:X::X:X) [primary]
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

local-ip

Specify Local IP Address from which to contact ASP

A.B.C.D

Local IPv4 Address from which to contact of ASP

X:X::X:X

Local IPv6 Address from which to contact of ASP

[primary]

Signal the SCTP peer to use this address as Primary Address

1.13.5 no destination-audit asp-active

Command

```
no destination-audit asp-active
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

no

Negate a command or set its defaults

destination-audit

Configure ASP Auditing (xUA DAUD)

asp-active

Transmit xUA DAUD after ASP successful activate (for remote PCs in sccp address-book)

1.13.6 no local-ip (A.B.C.D|X:X::X:X)

Command

```
no local-ip (A.B.C.D|X:X::X:X)
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

no

Negate a command or set its defaults

local-ip

Specify Local IP Address from which to contact ASP

A.B.C.D

Local IPv4 Address from which to contact of ASP

X:X::X:X

Local IPv6 Address from which to contact of ASP

1.13.7 no quirk (no_notify|daud_in_asp|snm_inactive)

Command

```
no quirk (no_notify|daud_in_asp|snm_inactive)
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

quirk

Disable quirk to work around interop issues

no_notify

Peer SG doesn't send NTFY(AS-INACTIVE) after ASP-UP

daud_in_asp

Allow Rx of DAUD in ASP role

snm_inactive

Allow Rx of [S]SNM in AS-INACTIVE state

1.13.8 no remote-ip (A.B.C.D|X:X::X:X)

Command

```
no remote-ip (A.B.C.D|X:X::X:X)
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

no

Negate a command or set its defaults

remote-ip

Specify Remote IP Address of ASP

A.B.C.D

Remote IPv4 Address of ASP

X:X::X:X

Remote IPv6 Address of ASP

1.13.9 no sctp-param init (num-ostreams|max-instreams|max-attempts|timeout)

Command

```
no sctp-param init (num-ostreams|max-instreams|max-attempts|timeout)
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

no

Negate a command or set its defaults

sctp-param

Configure SCTP parameters

init

Configure INIT related parameters

num-ostreams

Configure INIT Number of Outbound Streams

max-instreams
: Configure INIT Maximum Inboud Streams

max-attempts
: Configure INIT Maximum Attempts

timeout
: Configure INIT Timeout (milliseconds)

1.13.10 no shutdown

Command

```
no shutdown
```

Global attributes

Flag: @
: This command applies on VTY node exit

Parameters

no
: Negate a command or set its defaults

shutdown
: Terminates SCTP association; New associations will be rejected

1.13.11 no tcp-param keepalive

Command

```
no tcp-param keepalive
```

Global attributes

Flag: @
: This command applies on VTY node exit

Parameters

no
: Negate a command or set its defaults

tcp-param
: Configure TCP parameters

keepalive
: Configure TCP keep-alive related parameters

1.13.12 no tcp-param keepalive (time|intvl|probes)

Command

```
no tcp-param keepalive (time|intvl|probes)
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

no

Negate a command or set its defaults

tcp-param

Configure TCP parameters

keepalive

Configure TCP keep-alive related parameters

time

Configure number of seconds a connection needs to be idle before beggining to send probes

intvl

Configure number of seconds between probes

probes

Configure max number of probes to send before giving up if no response is obtained

1.13.13 no tcp-param user-timeout

Command

```
no tcp-param user-timeout
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

no

Negate a command or set its defaults

tcp-param

Configure TCP parameters

user-timeout

Configure TCP User Timeout socket option (TCP_USER_TIMEOUT)

1.13.14 qos-class <0-7>

Command

```
qos-class <0-7>
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

qos-class

Specify QoS Class of ASP

<0-7>

QoS Class

1.13.15 quirk (no_notify|daud_in_asp|snm_inactive)

Command

```
quirk (no_notify|daud_in_asp|snm_inactive)
```

Global attributes

Flag: !

This command applies immediately

Parameters

quirk

Enable quirk to work around interop issues

no_notify

Peer SG doesn't send NTFY(AS-INACTIVE) after ASP-UP

daud_in_asp

Allow Rx of DAUD in ASP role

snm_inactive

Allow Rx of [S]SNM in AS-INACTIVE state

1.13.16 remote-ip (A.B.C.D|X:X::X:X) [primary]

Command

```
remote-ip (A.B.C.D|X:X::X:X) [primary]
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

remote-ip

Specify Remote IP Address of ASP

A.B.C.D

Remote IPv4 Address of ASP

X:X::X:X

Remote IPv6 Address of ASP

[primary]

Set remote address as SCTP Primary Address

1.13.17 role (sg|asp|ipsp)

Command

```
role (sg|asp|ipsp)
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

role

Specify the xUA role for this ASP

sg

SG (Signaling Gateway)

asp

ASP (Application Server Process)

ipsp

IPSP (IP Signalling Point)

1.13.18 sctp-param init (num-ostreams|max-instreams|max-attempts|timeout) <0-65535>

Command

```
sctp-param init (num-ostreams|max-instreams|max-attempts|timeout) <0-65535>
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

sctp-param

Configure SCTP parameters

init

Configure INIT related parameters

num-ostreams

Configure INIT Number of Outbound Streams

max-instreams

Configure INIT Maximum Inboud Streams

max-attempts

Configure INIT Maximum Attempts

timeout

Configure INIT Timeout (milliseconds)

<0-65535>

Value of the parameter

1.13.19 shutdown

Command

```
shutdown
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

shutdown

Terminates SCTP association; New associations will be rejected

1.13.20 tcp-param keepalive (time|intvl|probes) <0-65535>

Command

```
tcp-param keepalive (time|intvl|probes) <0-65535>
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

tcp-param

Configure TCP parameters

keepalive

Configure TCP keep-alive related parameters

time

Configure number of seconds a connection needs to be idle before beggining to send probes

intvl

Configure number of seconds between probes

probes

Configure max number of probes to send before giving up if no response is obtained

<0-65535>

Value of the parameter

1.13.21 tcp-param keepalive enabled

Command

```
tcp-param keepalive enabled
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

tcp-param

Configure TCP parameters

keepalive

Configure TCP keep-alive related parameters

enabled

Enable TCP keep-alive

1.13.22 tcp-param user-timeout <0-65535>

Command

```
tcp-param user-timeout <0-65535>
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

tcp-param

Configure TCP parameters

user-timeout

Configure TCP User Timeout socket option (TCP_USER_TIMEOUT)

<0-65535>

Value of the parameter

1.13.23 timer lm (wait_asp_up|wait_notify|wait_notify_rkm|wait_rk_reg_resp) <1-999999>

Command

```
timer lm (wait_asp_up|wait_notify|wait_notify_rkm|wait_rk_reg_resp) <1-999999>
```

Global attributes

Flag: !

This command applies immediately

Parameters

timer

Configure ASP default timer values

lm

Configure ASP default lm timer values

wait_asp_up

Restart ASP after timeout waiting for ASP UP (SG role) / ASP UP ACK (ASP role) (s) (default: 20)

wait_notify

Restart ASP after timeout waiting for NOTIFY (s) (default: 2)

wait_notify_rkm

Restart ASP after timeout waiting for NOTIFY after RKM registration (s) (default: 20)

wait_rk_reg_resp

Restart ASP after timeout waiting for RK_REG_RESP (s) (default: 10)

<1-999999>

Timer value, in seconds

1.13.24 timer xua (ack|beat) <1-999999>

Command

```
timer xua (ack|beat) <1-999999>
```

Global attributes

Flag: !

This command applies immediately

Parameters

timer

Configure ASP default timer values

xua

Configure ASP default xua timer values

ack

Resend ASP Up/Down/Active/Inactive after timeout waiting for ASP Up/Down/Active/Inactive ACK (ASP role)(s) (default: 2)

beat

Heartbeat Timer (0 = disabled) (s) (default: 30)

<1-999999>

Timer value, in seconds

1.13.25 transport-role (client|server)

Command

```
transport-role (client|server)
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

transport-role

Specify the transport layer role for this ASP

client

Operate as a client; connect to a server

server

Operate as a server; wait for client connections

1.14 config-cs7-listen

1.14.1 accept-asp-connections (pre-configured|dynamic-permitted)

Command

```
accept-asp-connections (pre-configured|dynamic-permitted)
```

Global attributes

Flag: !

This command applies immediately

Parameters

accept-asp-connections

Define what kind of ASP connections to accept

pre-configured

Accept only pre-configured ASPs (source IP/port)

dynamic-permitted

Accept any connection and dynamically create an ASP definition

1.14.2 local-ip (A.B.C.D|X:X::X:X)

Command

```
local-ip (A.B.C.D|X:X::X:X)
```

Global attributes

Flag: !

This command applies immediately

Parameters

local-ip

Configure the Local IP Address for xUA

A.B.C.D

IPv4 Address to use for XUA

X:X::X:X

IPv6 Address to use for XUA

1.14.3 no local-ip (A.B.C.D|X:X::X:X)

Command

```
no local-ip (A.B.C.D|X:X::X:X)
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

no

Negate a command or set its defaults

local-ip

Configure the Local IP Address for xUA

A.B.C.D

IPv4 Address to use for XUA

X:X::X:X

IPv6 Address to use for XUA

1.14.4 no sctp-param init (num-ostreams|max-instreams)

Command

```
no sctp-param init (num-ostreams|max-instreams)
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

no

Negate a command or set its defaults

sctp-param

Configure SCTP parameters

init

Configure INIT related parameters

num-ostreams

Configure INIT Number of Outbound Streams

max-instreams

Configure INIT Maximum Inboud Streams

1.14.5 sctp-param init (num-ostreams|max-instreams) <0-65535>

Command

```
sctp-param init (num-ostreams|max-instreams) <0-65535>
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

sctp-param

Configure SCTP parameters

init

Configure INIT related parameters

num-ostreams

Configure INIT Number of Outbound Streams

max-instreams

Configure INIT Maximum Inboud Streams

<0-65535>

Value of the parameter

1.15 config-cs7-sccpaddr

1.15.1 global-title

Command

```
global-title
```

Global attributes

Flag: !

This command applies immediately

Parameters

global-title

Add/Modify Global Title

1.15.2 no global-title

Command

```
no global-title
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

global-title

Remove Global Title

1.15.3 no point-code

Command

```
no point-code
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

point-code

Remove point-code Number

1.15.4 no subsystem-number

Command

```
no subsystem-number
```

Global attributes

Flag: !
This command applies immediately

Parameters

no
Negate a command or set its defaults

subsystem-number
Remove Subsystem Number

1.15.5 point-code POINT_CODE

Command

```
point-code POINT_CODE
```

Global attributes

Flag: !
This command applies immediately

Parameters

point-code
Add point-code Number

POINT_CODE
PC

1.15.6 routing-indicator (GT|PC|IP)

Command

```
routing-indicator (GT|PC|IP)
```

Global attributes

Flag: !
This command applies immediately

Parameters

routing-indicator
Add Routing Indicator

GT
by global-title

PC
by point-code

IP
by ip-address

1.15.7 subsystem-number <0-4294967295>

Command

```
subsystem-number <0-4294967295>
```

Global attributes

Flag: !

This command applies immediately

Parameters

subsystem-number

Add Subsystem Number

<0-4294967295>

SSN

1.16 config-cs7-sccpaddr-gt

1.16.1 digits DIGITS

Command

```
digits DIGITS
```

Global attributes

Flag: !

This command applies immediately

Parameters

digits

Set Global Title Digits

DIGITS

Number digits

1.16.2 global-title-indicator <0-15>

Command

```
global-title-indicator <0-15>
```

Global attributes

Flag: !

This command applies immediately

Parameters

global-title-indicator

Set Global Title Indicator

<0-15>

GTI

1.16.3 nature-of-address-indicator <0-127>

Command

```
nature-of-address-indicator <0-127>
```

Global attributes

Flag: !

This command applies immediately

Parameters

nature-of-address-indicator

Set Global Title Nature of Address Indicator

<0-127>

NAI

1.16.4 numbering-plan-indicator <0-15>

Command

```
numbering-plan-indicator <0-15>
```

Global attributes

Flag: !

This command applies immediately

Parameters

numbering-plan-indicator

Set Global Title Numbering Plan Indicator

<0-15>

NPI

1.16.5 translation-type <0-255>

Command

```
translation-type <0-255>
```

Global attributes

Flag: !

This command applies immediately

Parameters

translation-type

Set Global Title Translation Type

<0-255>

TT

1.17 config-cpu-sched

1.17.1 cpu-affinity (self|all|<0-4294967295>|THREADNAME) CPUHEXMASK [delay]

Command

```
cpu-affinity (self|all|<0-4294967295>|THREADNAME) CPUHEXMASK [delay]
```

Global attributes

Flag: !

This command applies immediately

Parameters

cpu-affinity
: Set CPU affinity mask on a (group of) thread(s)

self
: Set CPU affinity mask on thread running the VTY

all
: Set CPU affinity mask on all process' threads

<0-4294967295>
: Set CPU affinity mask on a thread with specified PID

THREADNAME
: Set CPU affinity mask on a thread with specified thread name

CPUHEXMASK
: CPU affinity mask

[delay]
: If set, delay applying the affinity mask now and let the app handle it at a later point

1.17.2 policy rr <1-32>

Command

```
policy rr <1-32>
```

Global attributes

Flag: !
: This command applies immediately

Parameters

policy
: Set the scheduling policy to use for the process

rr
: Use the SCHED_RR real-time scheduling algorithm

<1-32>
: Set the SCHED_RR real-time priority

1.18 config-ns-bind

1.18.1 accept-dynamic-ip-sns

Command

```
accept-dynamic-ip-sns
```

Parameters

accept-dynamic-ip-sns
: Allow to create dynamic NS Entities by IP-SNS PDUs

1.18.2 accept-ipaccess

Command

```
accept-ipaccess
```

Parameters

accept-ipaccess
: Allow to create dynamic NS Entity by NS Reset PDU on UDP (ip.access style)

1.18.3 dscp <0-63>

Command

```
dscp <0-63>
```

Parameters

dscp
: Set DSCP/TOS on the UDP socket

<0-63>
: DSCP Value

1.18.4 fr NETIF (fr|frnet)

Command

```
fr NETIF (fr|frnet)
```

Parameters

fr
: frame relay

NETIF
: Interface name(e.g. ep0)

fr
: fr (user) is used by BSS or SGSN attached to UNI of a FR network

frnet
: frnet (network) is used by SGSN if BSS is directly attached

1.18.5 ip-sns signalling-weight <0-254> data-weight <0-254>

Command

```
ip-sns signalling-weight <0-254> data-weight <0-254>
```

Parameters

ip-sns
: IP SNS

signalling-weight
: signalling weight used by IP-SNS dynamic configuration

<0-254>
: signalling weight used by IP-SNS dynamic configuration

data-weight
: data weight used by IP-SNS dynamic configuration

<0-254>
: data weight used by IP-SNS dynamic configuration

1.18.6 listen (A.B.C.D|X:X::X:X) <1-65535>

Command

```
listen (A.B.C.D|X:X::X:X) <1-65535>
```

Parameters

listen
: Configure local IP + Port of this bind

A.B.C.D
: Local IPv4 Address

X:X::X:X
: Local IPv6 Address

<1-65535>
: Local UDP Port

1.18.7 no accept-dynamic-ip-sns

Command

```
no accept-dynamic-ip-sns
```

Parameters

no
: Negate a command or set its defaults

accept-dynamic-ip-sns
: Disable dynamic creation of NS Entities by IP-SNS PDUs

1.18.8 no accept-ipaccess

Command

```
no accept-ipaccess
```

Parameters

no
: Negate a command or set its defaults

accept-ipaccess
: Reject NS Reset PDU on UDP (ip.access style)

1.18.9 no dscp

Command

```
no dscp
```

Parameters

no
: Set DSCP/TOS on the UDP socket

dscp
: DSCP Value

1.18.10 no fr NETIF

Command

```
no fr NETIF
```

Parameters

no
: Negate a command or set its defaults

fr
: Delete a frame relay link

NETIF
: Delete a frame relay link

1.18.11 no listen

Command

```
no listen
```

Parameters

no
: Negate a command or set its defaults

listen
: Delete a IP/Port assignment

1.18.12 socket-priority <0-255>

Command

```
socket-priority <0-255>
```

Parameters

socket-priority
: Set socket priority on the UDP socket

<0-255>
: Priority Value (>6 requires CAP_NET_ADMIN)

1.19 config-ns-nse

1.19.1 ip-sns-bind BINDID

Command

```
ip-sns-bind BINDID
```

Parameters

ip-sns-bind
: IP SNS binds

BINDID
: Name of NS udp bind whose IP endpoint will be used as IP-SNS local endpoint. Can be given multiple times.

1.19.2 ip-sns-remote (A.B.C.D|X:X::X:X) <1-65535>

Command

```
ip-sns-remote (A.B.C.D|X:X::X:X) <1-65535>
```

Parameters

ip-sns-remote
: SNS Initial Endpoint

A.B.C.D
: SGSN IPv4 Address

X:X::X:X
: SGSN IPv6 Address

<1-65535>
: SGSN UDP Port

1.19.3 no ip-sns-bind BINDID

Command

```
no ip-sns-bind BINDID
```

Parameters

no
: Negate a command or set its defaults

ip-sns-bind
: IP SNS binds

BINDID
: Name of NS udp bind whose IP endpoint will not be used as IP-SNS local endpoint

1.19.4 no ip-sns-remote (A.B.C.D|X:X::X:X) <1-65535>

Command

```
no ip-sns-remote (A.B.C.D|X:X::X:X) <1-65535>
```

Parameters

no
: Negate a command or set its defaults

ip-sns-remote
: Delete a SNS Initial Endpoint

A.B.C.D
: SGSN IPv4 Address

X:X::X:X
: SGSN IPv6 Address

<1-65535>
: SGSN UDP Port

1.19.5 no nsvc fr NETIF dlci <16-1007>

Command

```
no nsvc fr NETIF dlci <16-1007>
```

Parameters

no
: Negate a command or set its defaults

nsvc
: Delete frame relay NS-VC

fr
: frame relay

NETIF
: frame relay interface. Must be registered via fr vty

dlci
: Data Link connection identifier

<16-1007>
: Data Link connection identifier

1.19.6 no nsvc ipa BIND (A.B.C.D|X:X::X:X) <1-65535> nsvci <0-65535>

Command

```
no nsvc ipa BIND (A.B.C.D|X:X::X:X) <1-65535> nsvci <0-65535>
```

Parameters

no
: Negate a command or set its defaults

nsvc
: Delete a NS Virtual Connection

ipa
: NS over UDP

BIND
: A unique bind identifier created by ns bind

A.B.C.D
: Remote IPv4 Address

X:X::X:X
: Remote IPv6 Address

<1-65535>
: Remote UDP Port

nsvci
: NS Virtual Connection ID (NS-VCI)

<0-65535>
: NS Virtual Connection ID (NS-VCI)

1.19.7 no nsvc nsvci <0-65535>

Command

```
no nsvc nsvci <0-65535>
```

Parameters

no
: Negate a command or set its defaults

nsvc
: Delete NSVC

nsvci
: NS Virtual Connection ID (NS-VCI)

<0-65535>
: NS Virtual Connection ID (NS-VCI)

1.19.8 no nsvc udp BIND (A.B.C.D|X:X::X:X) <1-65535>

Command

```
no nsvc udp BIND (A.B.C.D|X:X::X:X) <1-65535>
```

Parameters

no
: Negate a command or set its defaults

nsvc
: Delete a NS Virtual Connection

udp
: NS over UDP

BIND
: A unique bind identifier created by ns bind

A.B.C.D
: Remote IPv4 Address

X:X::X:X
: Remote IPv6 Address

<1-65535>
: Remote UDP Port

1.19.9 nsvc fr NETIF dlci <16-1007> nsvci <0-65535>

Command

```
nsvc fr NETIF dlci <16-1007> nsvci <0-65535>
```

Parameters

nsvc
: NS Virtual Connection

fr
: frame relay

NETIF
: frame relay interface. Must be registered via fr vty

dlci
: NS Virtual Connection ID (NS-VCI)

<16-1007>
: NS Virtual Connection ID (NS-VCI)

nsvci
: Data Link connection identifier

<0-65535>
: Data Link connection identifier

1.19.10 nsvc ipa BIND (A.B.C.D|X:X::X:X) <1-65535> nsvci <0-65535>

Command

```
nsvc ipa BIND (A.B.C.D|X:X::X:X) <1-65535> nsvci <0-65535>
```

Parameters

nsvc
: NS Virtual Connection

ipa
: NS over UDP ip.access style (uses RESET/BLOCK)

BIND
: A unique bind identifier created by ns bind

A.B.C.D
: Remote IPv4 Address

X:X::X:X
: Remote IPv6 Address

<1-65535>
: Remote UDP Port

nsvci
: NS Virtual Connection ID (NS-VCI)

<0-65535>
: NS Virtual Connection ID (NS-VCI)

1.19.11 nsvc udp BIND (A.B.C.D|X:X::X:X) <1-65535>

Command

```
nsvc udp BIND (A.B.C.D|X:X::X:X) <1-65535>
```

Parameters

nsvc
: NS Virtual Connection

udp
: NS over UDP

BIND
: A unique bind identifier created by ns bind

A.B.C.D
: Remote IPv4 Address

X:X::X:X
: Remote IPv6 Address

<1-65535>
: Remote UDP Port

1.19.12 nsvc udp BIND (A.B.C.D|X:X::X:X) <1-65535> signalling-weight <0-254> data-weight...

Command

```
nsvc udp BIND (A.B.C.D|X:X::X:X) <1-65535> signalling-weight <0-254> data-weight  ↩
    <0-254>
```

Parameters

nsvc
: NS Virtual Connection

udp
: NS over UDP

BIND
: A unique bind identifier created by ns bind

A.B.C.D
: Remote IPv4 Address

X:X::X:X
: Remote IPv6 Address

<1-65535>
: Remote UDP Port

signalling-weight
: Signalling weight of the NSVC (default = 1)

<0-254>
: Signalling weight of the NSVC (default = 1)

data-weight
: Data weight of the NSVC (default = 1)

<0-254>
: Data weight of the NSVC (default = 1)

1.20 config-sgsn

Configure the remote GGSN, access-control and other attributes of the SGSN

1.20.1 access-point-name NAME

Command

```
access-point-name NAME
```

Parameters

access-point-name
: Globally allow the given APN name for all subscribers.

NAME
: Add this NAME to the list

1.20.2 apn APNAME ggsn <0-255>

Command

```
apn APNAME ggsn <0-255>
```

Parameters

apn
: Configure the information per APN

APNAME
: The APN gateway name optionally prefixed by '*' (wildcard)

ggsn
: Select the GGSN to use for the given APN gateway prefix

<0-255>
: The GGSN id

1.20.3 apn APNAME imsi-prefix IMSIPRE ggsn <0-255>

Command

```
apn APNAME imsi-prefix IMSIPRE ggsn <0-255>
```

Parameters

apn
: Configure the information per APN

APNAME
: The APN gateway name optionally prefixed by '*' (wildcard)

imsi-prefix
: Select the GGSN to use for the given APN gateway prefix if and only if the IMSI matches the given prefix.

IMSIPRE
: An IMSI prefix

ggsn
: Select the GGSN to use when APN gateway and IMSI prefix match

<0-255>
: The GGSN id

1.20.4 asn1 debug (1|0)

Command

```
asn1 debug (1|0)
```

Parameters

asn1
: ASN.1 settings

debug
: Enable ASN.1 debug messages

1
: Log ASN.1 debug messages to stderr

0
: Do not log ASN.1 debug messages to stderr

1.20.5 asn1 xer-print (1|0)

Command

```
asn1 xer-print (1|0)
```

Parameters

asn1
: ASN.1 settings

xer-print
: Log human readable representations of all ASN.1 messages to stderr

1
: Log XML representation of all ASN.1 messages to stderr

0
: Do not log decoded ASN.1 messages to stderr

1.20.6 auth-policy (accept-all|closed|acl-only|remote)

Command

```
auth-policy (accept-all|closed|acl-only|remote)
```

Parameters

auth-policy

Configure the Authorization policy of the SGSN. This setting determines which subscribers are permitted to register to the network.

accept-all

Accept all IMSIs (DANGEROUS)

closed

Accept only home network subscribers or those in the ACL

acl-only

Accept only subscribers in the ACL

remote

Use remote subscription data only (HLR)

1.20.7 authentication (optional|required)

Command

```
authentication (optional|required)
```

Parameters

authentication

Whether to enforce MS authentication in GERAN (only with auth-policy remote)

optional

Allow MS to attach via GERAN without authentication (default and only possible value for non-remote auth-policy)

required

Always require authentication (only available for auth-policy remote, default with that auth-policy)

1.20.8 cdr filename NAME

Command

```
cdr filename NAME
```

Parameters

cdr

CDR

filename

Set the file name for the call-data-record file, logging the data usage of each subscriber.

NAME

filename

1.20.9 cdr interval <1-2147483647>

Command

```
cdr interval <1-2147483647>
```

Parameters

cdr
: CDR

interval
: Set the interval for the call-data-record file

<1-2147483647>
: interval in seconds

1.20.10 cdr trap

Command

```
cdr trap
```

Parameters

cdr
: CDR

trap
: Enable sending CDR via TRAP CTRL messages

1.20.11 compression rfc1144 active slots <1-256>

Command

```
compression rfc1144 active slots <1-256>
```

Parameters

compression
: Configure compression

rfc1144
: RFC1144 Header compression scheme

active
: Compression is actively proposed

slots
: Number of compression state slots

<1-256>
: Number of compression state slots

1.20.12 compression rfc1144 passive

Command

```
compression rfc1144 passive
```

Parameters

compression
: Configure compression

rfc1144
: RFC1144 Header compression scheme

passive
: Compression is available on request

1.20.13 compression v42bis active direction (ms|sgsn|both) codewords <512-65535> strlen ...

Command

```
compression v42bis active direction (ms|sgsn|both) codewords <512-65535> strlen <6-250>
```

Parameters

compression
: Configure compression

v42bis
: V.42bis data compression scheme

active
: Compression is actively proposed

direction
: Direction in which the compression shall be active (p0)

ms
: Compress ms->sgsn direction only

sgsn
: Compress sgsn->ms direction only

both
: Both directions

codewords
: Number of codewords (p1)

<512-65535>
: Number of codewords

strlen
: Maximum string length (p2)

<6-250>
: Maximum string length

1.20.14 compression v42bis passive

Command

```
compression v42bis passive
```

Parameters

compression
: Configure compression

v42bis
: V.42bis data compression scheme

passive
: Compression is available on request

1.20.15 cs7-instance-iu <0-15>

Command

```
cs7-instance-iu <0-15>
```

Parameters

cs7-instance-iu
: Set SS7 to be used by the Iu-Interface.

<0-15>
: SS7 instance reference number (default: 0)

1.20.16 encryption cipher-plugin-path PATH

Command

```
encryption cipher-plugin-path PATH
```

Parameters

encryption
: Set encryption algorithms for SGSN

cipher-plugin-path
: Path to gprs encryption cipher plugin directory

PATH
: Plugin path

1.20.17 encryption gea <0-4> [<0-4>] [<0-4>] [<0-4>] [<0-4>]

Command

```
encryption gea <0-4> [<0-4>] [<0-4>] [<0-4>] [<0-4>]
```

Parameters

encryption
: Set encryption algorithms for SGSN

gea
: GPRS Encryption Algorithm

<0-4>
: GEAn Algorithm Number

[<0-4>]
: GEAn Algorithm Number

[<0-4>]
: GEAn Algorithm Number

[<0-4>]
: GEAn Algorithm Number

[<0-4>]
: GEAn Algorithm Number

1.20.18 encryption uea <0-2> [<0-2>] [<0-2>]

Command

```
encryption uea <0-2> [<0-2>] [<0-2>]
```

Parameters

encryption
: Set encryption algorithms for SGSN

uea
: UTRAN (3G) encryption algorithms to allow: 0 = UEA0 (no encryption), 1 = UEA1, 2 = UEA2.

<0-2>
: UEAn Algorithm Number

[<0-2>]
: UEAn Algorithm Number

[<0-2>]
: UEAn Algorithm Number

1.20.19 ggsn <0-255> echo-interval <1-36000>

Command

```
ggsn <0-255> echo-interval <1-36000>
```

Parameters

ggsn
: Configure the GGSN information

<0-255>
: GGSN Number

echo-interval
: Send an echo request to this static GGSN every interval.

<1-36000>
: Interval between echo requests in seconds.

1.20.20 ggsn <0-255> gtp-version (0|1)

Command

```
ggsn <0-255> gtp-version (0|1)
```

Parameters

ggsn
: Configure the GGSN information

<0-255>
: GGSN Number

gtp-version
: GTP Version

0
: Version 0

1
: Version 1

1.20.21 ggsn <0-255> no echo-interval

Command

```
ggsn <0-255> no echo-interval
```

Parameters

ggsn
: Configure the GGSN information

<0-255>
: GGSN Number

no
: Negate a command or set its defaults

echo-interval
: Send an echo request to this static GGSN every interval.

1.20.22 ggsn <0-255> remote-ip A.B.C.D

Command

```
ggsn <0-255> remote-ip A.B.C.D
```

Parameters

ggsn
: Configure the GGSN information

<0-255>
: GGSN Number

remote-ip
: Configure this static GGSN to use the specified remote IP address.

A.B.C.D
: IPv4 Address

1.20.23 ggsn dynamic

Command

```
ggsn dynamic
```

Parameters

ggsn
: Configure the GGSN information

dynamic
: Enable dynamic resolving of GGSNs based on DNS resolving the APN name like in a GRX-style setup. Changing this setting requires a restart.

1.20.24 grx-dns-add A.B.C.D

Command

```
grx-dns-add A.B.C.D
```

Parameters

grx-dns-add
: Use the specified IP address for DNS-resolving the AP names to GGSN IP addresses

A.B.C.D
: IPv4 address

1.20.25 gsup ipa-name NAME

Command

```
gsup ipa-name NAME
```

Parameters

gsup
: GSUP Parameters

ipa-name
: Set the IPA name of this SGSN

NAME
: A unique name for this SGSN. For example: PLMN + redundancy server number: SGSN-901-70-0. This name is used for GSUP routing and must be set if more than one SGSN is connected to the network. The default is 'SGSN-00-00-00-00-00-00'.

1.20.26 gsup oap-id <0-65535>

Command

```
gsup oap-id <0-65535>
```

Parameters

gsup
: GSUP Parameters

oap-id
: Set the OAP client ID for authentication on the GSUP protocol. This setting only applies if 'auth-policy remote' is used.

<0-65535>
: OAP client ID (0 == disabled)

1.20.27 gsup oap-k K

Command

```
gsup oap-k K
```

Parameters

gsup
: GSUP Parameters

oap-k
: Set the OAP shared secret key K for authentication on the GSUP protocol. This setting only applies if auth-policy remote is used.

K
: K value (16 byte) hex

1.20.28 gsup oap-opc OPC

Command

```
gsup oap-opc OPC
```

Parameters

gsup
: GSUP Parameters

oap-opc
: Set the OAP shared secret OPC for authentication on the GSUP protocol. This setting only applies if auth-policy remote is used.

OPC
: OPC value (16 byte) hex

1.20.29 gsup remote-ip A.B.C.D

Command

```
gsup remote-ip A.B.C.D
```

Parameters

gsup
: GSUP Parameters

remote-ip
: Set the IP address of the remote GSUP server (e.g. OsmoHLR). This setting only applies if 'auth-policy remote' is used.

A.B.C.D
: IPv4 Address

1.20.30 gsup remote-port <0-65535>

Command

```
gsup remote-port <0-65535>
```

Parameters

gsup
: GSUP Parameters

remote-port
: Set the TCP port of the remote GSUP server, see also 'gsup remote-ip'

<0-65535>
: Remote TCP port

1.20.31 gtp local-ip A.B.C.D

Command

```
gtp local-ip A.B.C.D
```

Parameters

gtp
: GTP Parameters

local-ip
: Set the IP address for the local GTP bind for the Gp interface (towards the GGSNs). Note: in case you would like to run the GGSN on the same machine as the SGSN, you can not run both on the same IP address, since both sides are specified to use the same GTP port numbers (2123 and 2152). For example, you could use 127.0.0.1 for the SGSN and 127.0.0.2 for the GGSN in such situations.

A.B.C.D
: IPv4 Address

1.20.32 gtp state-dir PATH

Command

```
gtp state-dir PATH
```

Parameters

gtp
: GTP Parameters

state-dir
: Set the directory for the GTP State file

PATH
: Local Directory

1.20.33 imsi-acl (add|del) IMSI

Command

```
imsi-acl (add|del) IMSI
```

Parameters

imsi-acl
: Access Control List of foreign IMSIs

add
: Add IMSI to ACL

del
: Remove IMSI from ACL

IMSI
: IMSI of subscriber

1.20.34 iu rab-assign-addr-enc (x213|v4raw)

Command

```
iu rab-assign-addr-enc (x213|v4raw)
```

Parameters

iu
: Iu interface protocol options

rab-assign-addr-enc
: Choose RAB Assignment's Transport Layer Address encoding

x213
: ITU-T X.213 compliant address encoding (default)

v4raw
: 32bit length raw IPv4 address (for ip.access nano3G)

1.20.35 mme NAME

Command

```
mme NAME
```

Parameters

mme
: Configure an MME peer

NAME
: Name identifying the MME peer

1.20.36 no access-point-name NAME

Command

```
no access-point-name NAME
```

Parameters

no
: Negate a command or set its defaults

access-point-name
: Configure a global list of allowed APNs

NAME
: Remove entry with NAME

1.20.37 no cdr filename

Command

```
no cdr filename
```

Parameters

no
: Negate a command or set its defaults

cdr
: CDR

filename
: Disable saving CDR to file

1.20.38 no cdr trap

Command

```
no cdr trap
```

Parameters

no
: Negate a command or set its defaults

cdr
: CDR

trap
: Disable sending CDR via TRAP CTRL messages

1.20.39 no compression rfc1144

Command

```
no compression rfc1144
```

Parameters

no
: Negate a command or set its defaults

compression
: Configure compression

rfc1144
: disable rfc1144 TCP/IP header compression

1.20.40 no compression v42bis

Command

```
no compression v42bis
```

Parameters

no
: Negate a command or set its defaults

compression
: Configure compression

v42bis
: disable V.42bis data compression

1.20.41 no encryption cipher-plugin-path PATH

Command

```
no encryption cipher-plugin-path PATH
```

Parameters

no
: Negate a command or set its defaults

encryption
: Set encryption algorithms for SGSN

cipher-plugin-path
: Path to gprs encryption cipher plugin directory

PATH
: Plugin path

1.20.42 no mme NAME

Command

```
no mme NAME
```

Parameters

no
: Negate a command or set its defaults

mme
: Delete an MME peer configuration

NAME
: Name identifying the MME peer

1.20.43 timer [TNNNN] [(<0-2147483647>|default)]

Command

```
timer [TNNNN] [(<0-2147483647>|default)]
```

Parameters

timer
: Configure or show timers

[TNNNN]
: T- or X-timer-number -- 3GPP compliant timer number of the format ’1234’ or ’T1234’ or ’t1234’; Osmocom-specific timer number of the format: ’X1234’ or ’x1234’.

[<0-2147483647>]
: New timer value

[default]
: Set to default timer value

1.20.44 timer gtp [TNNNN] [(<0-2147483647>|default)]

Command

```
timer gtp [TNNNN] [(<0-2147483647>|default)]
```

Parameters

timer
: Configure or show timers

gtp
: GTP (libgtp) timers

[TNNNN]
: T- or X-timer-number -- 3GPP compliant timer number of the format ’1234’ or ’T1234’ or ’t1234’; Osmocom-specific timer number of the format: ’X1234’ or ’x1234’.

[<0-2147483647>]
: New timer value

[default]
: Set to default timer value

1.21 config-sgsn-mme

1.21.1 gtp ran-info-relay <0-999> <0-999> <0-65535>

Command

```
gtp ran-info-relay <0-999> <0-999> <0-65535>
```

Parameters

gtp
: Configure GTP connection

ran-info-relay
: Configure RAN Information Relay routing

<0-999>
: MCC

<0-999>
: MNC

<0-65535>
: TAC

1.21.2 gtp ran-info-relay default

Command

```
gtp ran-info-relay default
```

Parameters

gtp
: Configure GTP connection

ran-info-relay
: Configure RAN Information Relay routing

default
: Set as default route

1.21.3 gtp remote-ip A.B.C.D

Command

```
gtp remote-ip A.B.C.D
```

Parameters

gtp
: Configure GTP connection

remote-ip
: Set Remote GTP IP address

A.B.C.D
: IP information

1.21.4 gummei <0-999> <0-999> <0-65535> <0-254>

Command

```
gummei <0-999> <0-999> <0-65535> <0-254>
```

Parameters

gummei
: Configure the mme

<0-999>
: MCC

<0-999>
: MNC

<0-65535>
: MME GroupId

<0-254>
: MME Code

1.21.5 no gtp ran-info-relay <0-999> <0-999> <0-65535>

Command

```
no gtp ran-info-relay <0-999> <0-999> <0-65535>
```

Parameters

no
: Negate a command or set its defaults

gtp
: Configure GTP connection

ran-info-relay
: Configure RAN Information Relay routing

<0-999>
: MCC

<0-999>
: MNC

<0-65535>
: TAC

1.21.6 no gtp ran-info-relay default

Command

```
no gtp ran-info-relay default
```

Parameters

no
: Negate a command or set its defaults

gtp
: Configure GTP connection

ran-info-relay
: Configure RAN Information Relay routing

default
: Set as default route

1.21.7 no gummei

Command

```
no gummei
```

Parameters

no
: Negate a command or set its defaults

gummei
: Remove gummei